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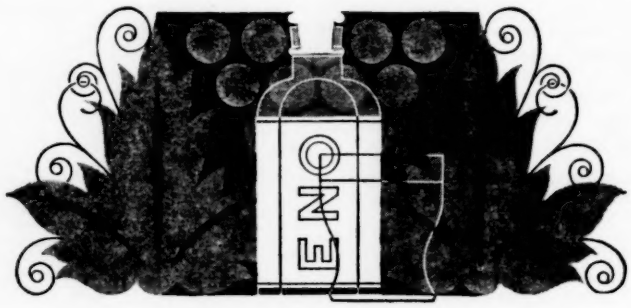

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THE main biographical facts of Harvey's life are well known, and Sir Wilmot Herringham, in his fascinating oration two years ago, gave us some interesting details about the Harvey family. When all is said and done, however, we really do not know very much about him, for, as Sir Wilmot said, Harvey had a singular capacity for slipping through life unnoticed. We do not even know whether he attained that happiness at home which, according to Dr. Johnson, is the ultimate result of all ambition; for he was childless, and Mrs. Harvey is only a shadowy figure in the background of his life. It is a pity that he had no Boswell. If he had, we should not only have known many more details of his walk and conversation, but we should have had more of his pregnant sayings, such as those recorded by Aubrey: "That man is but a great mischievous baboon," and "That the Europeans know not how to order or govern their women, but that the Turks are the only people who use them wisely," and of those obiter dicta scattered throughout his writings —"Many things are discovered by accident"; "Men were first led to cultivate philosophy by wondering at what they saw," and so forth.

As it is, we might say of Harvey as the present Poet Laureate has said of Shakespeare, "that we know little of his human relationships is one of the blessed facts about him. That we conjecture much is the penalty a nation pays for failing to know the genius when he appears."

Character of Harvey.

Fortunately, however, the main outlines of Harvey's character are writ large in his works, indeed few scientific writers are more self-revealing.

And first of the characteristics so revealed I would put his *love of truth*. There is no word commoner in his writings than "truth," and we may be sure that none was oftener on his lips. "My trust," he boldly declares, "is in my love of Truth," or again, "I avow myself the partisan of Truth alone." Like all great discoverers he seems to have had a flair for truth, and that "fanaticism of veracity," of which Huxley spoke, and doubtless he was ready, as Huxley also was, to follow the truth into whatever abyss it might lead him. It was one of the greatest compliments that he ever paid to the Fellows of the College of Physicians that he assumed that in this matter they were like-minded with himself. "I even ventured to hope," he says, "that I should have the comfort of finding all that you had granted me in your sheer love of truth, conceded by others who were philosophers like yourselves."

Next perhaps to his love of truth was his *reverence for Nature*, which seems to mean in him the same thing as reverence for the Creator. He appears to have had what Einstein calls a truly religious feeling in face of Nature. "Nature, perfect and divine, is ever in the same things harmonious with herself." "Nature ever labours with foresight and intelligence." "That which is in conformity with Nature is right." "There is nothing either more ancient or of higher authority than Nature." "In Nature, just as there is nothing lacking, so there is nothing superfluous." These, and many similar quotations which might be made from his writings, reveal his attitude. In his reverence for Nature he reminds us indeed of some of the great poets. He would have perfectly understood Nature as the "Old Nurse," and would have subscribed heartily to the affirmation that "she never yet betrayed the heart that loved her."

Equal to his love of truth and his reverence for Nature was his *charity*, using the word in the scriptural sense. Of no man can it more truly be said that he envied not, vaunted not himself, was not puffed up. "Whilst I think the industry of everyone deserving of commendation," he says, "I do not remember that I have anywhere bepraised my own." He did not "behave himself unseemly," for, as Willis pointed out, all his public actions known to us were marked not only by propriety but by grace, and it was as true of him, as it was of his royal master on the scaffold, that he "nothing common did nor mean." He sought not his own and was not easily provoked. Even when his papers and scientific records were destroyed by the mob—which he says was the worst crucifixion he ever had to endure—his only comment is: "Let gentle minds forgive me, if, recalling the irreparable injuries I have suffered, I here give vent to a sigh." Finally, he thought no evil ("to return evil speaking with evil speaking I hold to be unworthy of a philosopher," he said), but, as we have seen, rejoiced in the Truth.

Imagination, if by that we mean the creative faculty of the mind whereby it moves outside experience, was not so conspicuous in Harvey as it has been in many famous discoverers. The "De Motu" shows little of it. His argument in that great book proceeds forward, almost in pedestrian fashion, from position to position, till at last he is driven, as it were against himself, to see the truth, and his other book, the "De Generatione," shows fancy rather than imagination. He was not one of those who saw a truth before he proved it. His mind did not take a sudden imaginative leap from the particular to the general, as Darwin's did, nor did he use all his faculties together to reach a result intuitively by a process hardly to be observed or analysed. He was more like Hunter in his love of facts, but he saw quickly the significance of facts within his experience and perhaps that also is imagination.

Few great men, said Dr. Arnold, have lacked *humour*, and there are indications that Harvey was not wanting in this priceless gift, though his humour was probably of a subacid and rather sardonic sort, and his laughter would not be the "sudden glory" of Hobbes. There is humour in his description of his discovery of an egg in the dead body of Mrs. Harvey's parrot, which had all its life been supposed to be a male, and his account of his visit to the reputed witch at Newmarket is also full of it in a quiet way. His contemporaries evidently had some trust in his humorous sense, as is shown in Selden's amusing description of the cure of a person of Quality "with two devils in the head," in which he secured Harvey's coöperation.

* The Harveian Oration, delivered before the Royal College of Physicians of London on Oct. 19th.

He was able also to see humour even in little things. "How pleasantly are we moved to laughter," he writes in the "De Generatione," "when we see the poor hen following to the water the supposititious brood of ducklings she has hatched, wandering restlessly round the pool attempting to wade after them to her own imminent peril, and by her noises and various artifices striving to entice them back to the shore." His sense of humour must have been of value to him not only in furnishing him with hints of truth, but in enabling him to face with equanimity the prejudices of his Galenic contemporaries, just as Galileo, no doubt, found it helpful in facing the Inquisition and in enabling him to murmur, as he rose from his knees after his recantation, "E pur si muove." For humour, as Mr. Graham Wallas reminds us, is a powerful instrument for clearing away what Carlyle described as "the dead pedantries, inveracities, and accumulated dung-mountains" of scientific as well as social, political, and religious thought, nor need we have any doubt that Harvey was always able to recognise in himself what W. K. Clifford called the still small voice that whispers "fiddlesticks."

Reflecting upon the sense of humour in Harvey, it is permissible to regret that it is a quality not more abundant in scientific workers and writers. It would save us from much pedantry and dulness, from much solemn trifling calling itself research, and it would make scientific literature immeasurably more readable.

Love of truth, reverence and charity, with some tincture of imagination and humour, these were the chief features of Harvey's personality; but to complete the picture we must add moral courage—which Michael Foster said is an essential part of the scientific character—patience and reflectiveness. It must have required much moral courage to attack the Galenic stronghold, and it is no wonder that Zachary Wood apostrophised him as "Truly a bold man, indeed, O disturber of the Quiet of Physicians! O Seditious Citizen of the Physical Commonwealth!" His patience was shown not only in the carrying out of his investigations, but in his reluctance to make them public. He always bided his time. He was like Darwin, who waited 29 years for the results of a single experiment, and all of whose work on evolution was published after he was 50. In his slowness to publish he resembled other great men of his time, and the next century, Galileo, Newton, Bacon, Cavendish, and Gauss. How different from us to-day with our "preliminary notes" and disputes as to precedence in discovery! Lastly, he was a reflective philosopher. Like Hunter his delight was to think. We are told that he would withdraw himself to the leads of his house in town, or to caves in his garden in the country, in order to indulge in contemplation. Surely in this also he has a lesson for our unreflective time.

Personality in Science.

I have dwelt at some length upon the main features of Harvey's character because, in so doing, I believe that I am strictly fulfilling the injunction laid upon me to commemorate the benefactors of the College. For whilst we are grateful to our material benefactors, we owe an equal debt of gratitude to those who have conferred upon us the benefaction of their example. Of these Harvey himself is chief, but the College has reason to be thankful that it has never wanted amongst its Fellows men who were like-minded with him, but who—mute, inglorious Harveys as they were—lacked the touch of genius, or perhaps only the opportunity, which would have made them famous as he is.

In these days, when it is the fashion to denigrate great men, it is pleasant to remember that no one has yet seriously attempted to belittle Harvey. William Hunter, it is true, tried to depreciate his share in the discovery of the circulation, but he made no reflections on Harvey's character, whilst the curious statement made in a letter from Izaak Walton to Aubrey that Mr. Warner had told Lord Winchester that he (Warner) "had first found out the circulation of the blood and discovered it to Dr. Harvey, who said that 'twas he himself that found it,'" may probably be dismissed as apocryphal. No, on this our Festival let us boldly praise famous men, and on St. Luke's day let us be grateful, not only for the great discoverer, but for the man who exhibited in his character so many of the virtues of the beloved physician.

Apart from these domestic reasons, peculiar to the College, there are wider considerations which make the study of the character and personality of Harvey, as of those of all great discoverers, of interest. What part, we may ask, does personality play in the highest scientific work?

In art, of course, the personality of the artist is everything, and the same is true of literature—the style is the man himself. But in the case of science the influence of personality is not so obvious. There is a tendency, indeed, to regard scientific men as a sort of robots who discover facts and laws by a purely intellectual process with which character has nothing to do. This, surely, is too narrow a view. Truth is as many-sided as human nature and requires the whole man to discover it. The great scientist must not only love truth as Harvey did, but he must have a feeling also for the beautiful and for the good. For truth is perceived by the emotions as well as by the intellect, and the poet and the discoverer are to some extent one. Moral qualities also are required, such as honesty and a sense of justice. Of course all scientific men do not possess these qualities. There is no type of mind which can fairly be described as scientific, for there is no intellectual specialisation ab initio, and scientific men are as full of prejudices and weaknesses as others; Harvey himself, let us be thankful, was neither saint nor sage. In proportion, however, as the emotional and moral elements in his personality are developed and cultivated, will be the likelihood of the investigator attaining to the truth. In the words of Pascal, "it is only the great Souls who attain to the utmost limits of science," or, as Harvey himself put it, "Nor does God give that which is most excellent and chiefly to be desired—wisdom—to the wicked." The real investigator must have faith, hope, and charity: faith in the object of his quest and in his power to reach it; hope to enable him to overcome all obstacles in his way; and charity, that is love of the truth, and, in medical science especially, love also of mankind.

And if personality is important in the attainment of truth, it is surely equally important as Truth's advocate. The comparative absence of opposition to Harvey's discovery was no doubt partly due to the disarming modesty with which, like Lister, he gave it to the world, just as on the contrary Pasteur's aggressive cocksureness aroused the resistance of his contemporaries. But if personality is of importance in science in general, it is even more important in medicine, which is both a science and an art, and in the application of medical science in practice, the personality of the doctor is as dominant as that of any other artist. Nor is its importance likely to

lessen in future, for as investigation ceases to be individual and becomes more and more collective, so will it be essential to have leaders who, by their personality, can attract and control the subordinate workers.

If, then, personality is so important both in our science and in our art, it is surely matter for congratulation that our College, in selecting Members for the honour of its Fellowship, has always considered not intellectual attainment alone, but the character and quality of the whole man.

The Intellectual Climate of the Seventeenth Century and of To-day.

But Harvey's gifts of character and intellect, notable though they were, would not alone have enabled him to make his great discovery, and, like all innovators, he owed much to his predecessors. It is not usually difficult to trace the pedigree of great ideas—Einstein's theory is, perhaps, an exception to-day—for discoveries rarely spring to life full-grown like Minerva from the head of Jove. What Harvey owed to his predecessors in antiquity, and especially to Aristotle, has been shown by Dr. Raymond Crawfurd. He derived much from the Italian anatomists and no doubt also from his contemporary Galileo, the real founder of modern science, while his probable debt to Bacon and to Gilbert has been pointed out by Sir William Hale-White. All this is now familiar ground, and I do not propose to go over it again, but as "we are more children of the age we live in than of our own fathers," Harvey must be regarded as having been fortunate in the climate of opinion, to use Glanvil's phrase, in which his discovery came to birth. It has not always been so, of course. It is possible for a discovery to be born into an uncongenial mental climate, as Servetus and Semmelweis, to mention only two examples, found to their cost. But in Harvey's case the time was ripe for the man. Standing between the sixteenth and the eighteenth centuries, the seventeenth partook both of the credulity of the one and the scepticism of the other. It owed much to the Renaissance and more, perhaps, to the Reformation. It was a time of great awakening and renewal—the instauratio magna of Bacon. Scepticism and doubt, the active doubt which Goethe praised, were replacing credulity and dogmatism. Men were learning to trust reason rather than authority, to assert the liberty of individual judgment, to set the natural above the super-natural, and to look to the future rather than to the past. The imagination of the age had been kindled by the Copernican theory and by the new orientation of man to the universe which it brought about, as well as by the geographical discoveries of the preceding epoch. The century owed much also to its great poets. It has been well said by Buckle that it was no accident that Shakespeare preceded Newton, for the poets not only stimulated imagination, but led men back to Nature. Finally, as Dr. R. O. Moon has shown, it was an age greatly indebted to its philosophers, to Bacon, Descartes, and Spinoza especially, who created a spirit of scepticism and inquiry. Stimulated by their ideas, more men than ever before were turning away from the barren controversies of religion and devoting themselves to scientific pursuits, and these men animated and encouraged one another.

The practical results of the new outlook were also becoming apparent. Modern anatomy and physiology had already come to birth with the publication of Vesalius's great work only a generation before Harvey. Chemistry was emerging from alchemy, just as astronomy had already done from astrology, and in the early years of the century the science of physics also sprang into being. Nor was the revolt from authority seen only in science, it was being carried by Bacon into philosophy, by Hobbes and Glanvil into metaphysics, by Cromwell into politics, and by Harrington and Algernon Sydney into the theory of government. It was a time, in short, when anything seemed possible.

It is interesting to contrast the spirit of the age of Harvey which I have depicted with that of to-day. Like him, we live in a period of great unrest, political, social, and economic, but in our own age there has been a destruction of values, a throwing down of standards, and a removal of moral and intellectual landmarks of which the seventeenth century knew nothing. As a recent writer has said:—

> "Behind both the good and the evil manifestations of that age lay a philosophic absolutism and a certitude of conviction now lost. Even those men who had shaken off some prejudices and particular beliefs retained the conviction of the eternal and absolute validity of truth and duty—a conviction of the dignity of man and of the worth of his work still illuminated human thought."

The effect of the moral and intellectual chaos of our age has been disastrous to the arts and to some extent to literature, but it has not yet affected science. It may be, as Sir Frederick Andrewes suggested in his Oration more than ten years ago, that Western civilisation is now in a state of decline, but that science, as has always happened before, is affected last. We may even have to look in future to science for our poetry—and indeed there is more of the spirit of true poetry in the writings of the modern cosmogonists than in all the anthologies of neo-Georgian verse. But if the march of science shows no signs of slackening, at least we have lost the scientific optimism which inspired Bacon's "New Atlantis," and which was shown even more conspicuously by the scientific writers of the mid-nineteenth century. We are to some extent disillusioned with the results that science has yielded us. We are not so sure that the "Universe is friendly" after all, and that human life may not be merely "a discreditable episode in the history of one of the meaner planets," nor have we yet adjusted ourselves to the discoveries of modern astronomy any more than many men of Harvey's time had adjusted their beliefs to the great discovery of Copernicus. But this attitude is not likely to diminish the zest with which medical science in particular is pursued to-day. Never, on the contrary, has there been a time when conditions were more favourable for it, or when it and the practical benefits it brings were more sought after, for in our day the doctor has replaced the priest. This very popularity, however, has its own dangers. What we have to fear is the influence of the mass-mind, of the increasing importance attached to quantity rather than to quality in life, the undervaluation of knowledge for its own sake, and the exploitation of discovery for commercial ends. We may suffer also from the deflection of science by the pull of the politician, the philanthropist, and the press.

On the other hand, in all that concerns the apparatus of knowledge we have immense advantages compared with the seventeenth century. In Harvey's day there were no laboratories; scientific societies were only being founded, and scientific journals did not exist. The diffusion of new knowledge was slow and difficult, and investigators communicated their ideas and discoveries mostly by correspondence.

How different it is to-day when we have more laboratories than trained men to work in them, when societies have multiplied to a point when it is difficult to get audiences to attend them, and when our scientific periodicals are counted by the thousand. But these things also have their drawbacks. In Harvey's time Latin was the lingua franca known to workers in science in all countries. To-day anyone who aspires to be a scientist must know two or three modern languages besides his own—to say nothing of American. The accumulation of knowledge, too, is overwhelming. Look round this room in which we are met. It is a noble library indeed, but is it not also a mausoleum? And how many facts which men are at present hunting for, and theories which are even now being put forward as new, lie already buried in these shelves? No, we do not suffer to-day from starvation of the intellect; our danger rather is that science may become suffocated in its own secretions, and that a remedy should be found for this congestion and plethora of the scientific body is one of the most pressing needs of our generation. Again, in the time of Harvey there was no specialism, and it was still possible for a man to say that he took all knowledge as his province. Now specialism has been carried to the point of a vice, and the right hand of science does not know what the left is doing. We may agree with Sir Arthur Keith that specialism is inevitable as medical science evolves, but none the less we may be permitted to regret it. For specialism, however favourable to the accumulation of facts, is bad for the philosophy of knowledge. The worker in one province is too absorbed to notice what those in other provinces are about; indeed the terminology of the different specialties is now become so esoteric that other workers cannot understand it if they would. There is in consequence of this too little speculation and too little use of the imagination, and, compared with the wealth of knowledge and the brilliance of observation which it exhibits, most scientific literature is barren in ideas. It would be good for us all, perhaps, if there was a close time in laboratory work and the publishing of papers for, say, five years in order to give us leisure to digest the huge accumulation of knowledge which we already possess, and to think out new lines of advance.

Certainly the men of the seventeenth century, considering their inferior opportunities, did in this respect much better than we. They showed more imagination, they were less afraid of speculation and, alike in the solidity of its substance and in the perfection of its form, their work compares favourably with ours. It is true, of course, that our times are unpropitious to reflection, and we may well say, with the Victorian poet, though with better reason even than he:—

> "But we, brought forth and rear'd in hours
> Of change, alarm, surprise—
> What shelter to grow ripe is ours?
> What leisure to grow wise?"

But let us take courage again from the example of Harvey. He also lived in troublous times, yet he was able to abstract himself from the turmoil around him, and in thought and meditation to possess his soul in quiet.

Conservatism in Medicine.

It might have been supposed that Harvey's great discovery, born into such a congenial intellectual climate, would have been accepted everywhere and at once, yet we know that in fact some time elapsed before the truth was generally recognised. There was nothing new, however, in this. Truth has always had to fight its way. "How difficult it is," said Pasteur, "to obtain the triumph of truth." Jenner, Simpson, Lister, and Darwin, all had the same experience. It may be, as Mr. Wilfred Trotter would have us believe, that the truly scientific mind is altogether unafraid of the new, but, if so, the truly scientific mind must be rare. For history shows that prominent men of science have often themselves been the chief opponents of new truth. Simpson opposed Lister; Liebig opposed Pasteur; Owen opposed Darwin. In the seventeenth century Bacon rejected the Copernican theory, and poured scorn on the work of Gilbert on the magnet. Even Harvey, as we know, refused to recognise the demonstration of the lymphatics. We may flatter ourselves that new truth would have a better chance to-day, but the long neglect of Mendel's work, and that of Henri Fabre, should be a warning to us.

This conservatism of science is at first sight surprising, and it is of interest to inquire into the causes of it. Archibald Pitcairne ascribed the opposition to Harvey's discovery simply to ignorance and jealousy, whilst a recent American writer, Mr. Stern, using the language of modern psychology, has attributed it to such mental factors as "fear reactions in the presence of the unknown," and "the difficulty of reconditioning behaviour patterns" along with cultural influences, such as the power of tradition and authority, and ignorance of the experimental method. On the other hand, a modern English critic of science, Dr. R. H. Murray, thinks that the excessive conservatism of medical men is largely due to our habit of "laying down the law," as he puts it, to our patients. I prefer, however, to all these explanations the simple one of Bagehot that "the greatest pain to Human Nature is the pain of a new idea."

But, none the less, a great deal may be said in defence of the conservative attitude. It may be a good thing for truth to fight for its existence, for it is only by prevailing that it is proved to be truth. As Dr. Johnson said, "It is open to any man to state what he believes to be the truth, and it is open to any other man to knock him down; martyrdom is the test." We may even call Harvey himself as a witness in the defence of conservatism. "The authority of the ancients," he says, "is not to be readily thrown off," and again, "everything is not to be received at once with an unthinking credulity." We speak with approval of the virtue of the open mind, but there is also something to be said for the closed mind, for it is often forgotten that an ever open mind is like an open drain; it is apt to be the receptacle of a great deal of rubbish. There are times when we should have the courage to say of the new, "this is not true, or, if it is, it has no right to be." Especially in medicine is a reasonable conservatism to be commended. We dare not hazard the lives of the patients entrusted to us on the chance of a new theory being sound, or a new drug both useful and safe. We must first prove all things—and that takes time, and if there were more conservatism and less credulity in our profession we should be saved from those ephemeral fashions in pathological doctrine and in methods of treatment which do so much to bring contempt upon our art.

I would therefore venture to claim it, as not the least of the services of the College of Physicians to Medicine, that we have always, alike in matters of policy and of practice, adopted an attitude of wise conservatism.

Observation versus Experiment.

It is one of the duties of an Harveian orator to remind his hearers of Harvey's injunction that they should "study and seek out the secrets of Nature by way of experiment." However necessary in Harvey's day, this exhortation has become superfluous in our own. The experimental method has gone from one triumph to another and now dominates the whole field of Science, and its services to medical science in particular were eloquently brought before us by our late President, Sir John Rose Bradford, when he delivered this oration four years ago. But to those whose work lies in the clinical field, Harvey's advice must always have seemed a counsel of perfection. For how is one to apply the experimental method at the bedside? The imperious demands of practice leave little leisure for the planning and carrying out of experiments, whilst the claims of humanity restrict the application of the method in the case of the individual patient. It need excite no surprise, therefore, that some of the most earnest investigators in our science have suggested that a special class of clinicians—spoken of as research physicians—should be called into existence, who should devote their whole time and energies to searching out the secrets of disease by the experimental method, both in the laboratory and in the ward. This is not the occasion on which to discuss this proposal in detail. It is easy to see practical difficulties and objections, but it is a proposal which, in principle, should secure our sympathy. We may be certain that Harvey would have approved it. Indeed it is difficult to imagine a position which would have been more to his own taste and more adapted to his abilities than that of a "research physician."

But whilst we welcome any plan which offers a chance of increasing the application of experiment in practical medicine, it does not follow that we must turn our backs upon the old traditional clinical method of observation. The respective merits and scope of the two methods, experimental and observational, have lately been discussed by some of the acutest minds in our profession, and I do not intend to reopen the controversy, though it may be well to point out that the two methods are not mutually exclusive. Harvey himself was a great observer. This is apparent in all his work as an investigator, and had his projected volume of Medical Observations ever seen the light of day we may be sure that he would have appeared as a great clinical observer also. Devoted though he was to the experimental method, he frequently urges the duty of observation. "Diligent observation is requisite in every science," he says, "and the senses are frequently to be appealed to." And again, "we are of opinion that for the acquisition of truth we cannot rely on the theories of others, except there be added thereto a diligent course of observation." It has been said by someone that in experiments we question Nature; in observation we only listen to her. True, but we shall question Nature in vain, unless we listen to her replies. In other words, there is no real opposition between experiment and observation, for experiment is only observation carried out under artificially limited conditions and on a selected group of phenomena.

Nor can we agree with those who would have us believe that no further advances by purely observational methods are to be looked for. It may be that in countries of the temperate zone the clinical field has been so thoroughly gleaned that there would seem to be little chance of anything which mere observation can detect remaining unknown. We must remember, however, the saying of Bacon that "noble inventions may be lying at our very feet, and yet mankind may step over without seeing them." Even in recent years new diseases and "clinical syndromes" have been discovered and their natural history described by the observational method. It will suffice to mention epidemic encephalitis and acrodynia (pink disease) as examples. The fact also that such an obvious and striking phenomenon as the Babinski reflex has only been recognised since many of us here present were students should suffice to give us pause. No, the possibilities of clinical observation are not yet exhausted. In the domain of tropical medicine, for instance, great though the advances in recent years have been, there is still much field-work to be done. Clinical observation, going hand-in-hand with experiment, is throwing fresh light on the problems of epidemiology, whilst the enormous progress which this century has seen in psychological medicine has, from the nature of the material, been almost entirely along observational lines, and there is also scope for the study, by observation, of purely subjective symptoms, such as pain. Of the three members of the clinical triad—diagnosis, prognosis, treatment—the first is certainly coming to depend more and more upon the help of laboratory methods, but pure observation can still do much in the other two. The comparative neglect of prognosis especially is surprising, and any young Fellow of the College, who is prepared to devote a lifetime to the collection of his observations, might, in his later years, produce a treatise on the subject which would make our whole profession his debtor. It is the same with therapeutics. Pharmacology has done much for us, and many recent advances we owe to laboratory experiment, but in the last resort any method of treatment must stand or fall by its actual results in practice, and it is here that we are in need of more extensive, accurate, and controlled observations. For if the observational method is to yield results of any value, either in the sphere of treatment, or in any other, the observations must be accurate and controlled. It is a just reproach to clinical medicine that so often what passes for observation is really only an "impression," and that observation, even when accurate, is not checked by a sufficient number of controls. This, however, is not the fault of the method, but of those who employ it.

Neo-Hippocratism.

I have mentioned some special directions in which the observational method can still render us good service in the advance of knowledge, but, taking a wider view, I think there is reason to believe that in the immediate future still greater demands will be made upon it.

If one surveys the field of medical science to-day, and tries to estimate the direction in which the currents of contemporary thought are moving, one cannot help being impressed by the signs of a return towards the Hippocratic outlook. This new way of looking at medicine, or rather this revival, with modifications, of an old way, is called by its adherents by various names—constitutional medicine, the science of the individual, or neo-humoralism, according to the element in it which seems most important to the particular observer, but it may perhaps be conveniently described as "neo-Hippocratism." The Hippocratic doctrine was founded, it will be remembered, upon the four humours and upon the vis medicatrix naturæ, and careful clinical observation

was its method of investigation. The doctrine of the humours, though it dominated medicine for centuries, has long been abandoned, but neo-Hippocratic medicine deserves the title of neo-humoralism, in so far as it attaches a great importance to the body fluids. It is in this respect to be regarded as a revolt against the "solidism" preached by Cullen in the eighteenth century, and later established on a scientific basis by the work of Virchow and of Bichat. It recognises that all the phenomena of life are derived from physico-chemical reactions in the fluids of the body, and that a disease is often due not, as the morbid anatomy school teaches, to the changes found in the organs after death, but rather to subtle alterations in the physical and chemical properties of the fluids, to which the changes in the tissues are secondary, and it sets itself as one of its tasks the early recognition by biochemical methods of the changes in the fluids, with a view to arresting the disease before structural modifications have taken place.

Neo-Hippocratism also attaches great value to the vis medicatrix. It is vitalistic as Hippocratic medicine was, and not mechanistic like the medicine of Harvey's epoch. It sees in adaptation a principle as important in biology as the principle of the conservation of energy is in physics. It regards this purposive striving of the organism to adapt itself to the environment and to heal and restore itself when diseased as marking off all living things from the inorganic world and is in sympathy with Sydenham's definition of disease as "an effort of Nature, striving with all her might to restore the patient by the elimination of the morbific matter." It finds in the cause of a disease not a single agent, but a "constellation of conditions" in the environment to which the organism is seeking to adapt itself, and it attaches just as much importance to the soil as to the seed. In this also it is true to the Hippocratic tradition, which always regarded disease as endogenous rather than exogenous.

It lays great stress, too, on the fundamental unity of the living body and on the interdependence or integration of its parts. It considers it to be the essential vice of specialism that it tends to concentrate attention on the parts and to ignore the whole. It holds that the very unity of the organism limits the value of the experimental method as opposed to the observational in so far as it proceeds by an arbitrary isolation of phenomena in order to investigate them.

The circulation of the blood is, for the neo-Hippocratist, one of the chief modes by which the integration of the body is achieved, for through the medium of the blood every cell is able to influence every other, even the most remote. Integration is also maintained by the endocrine hormones carried by the blood, and to an even greater extent by the vegetative nervous system.

Upon the degree of perfection of the integration of the individual organism thus brought about, and its constitutional balance, depends in large measure, according to this view, its capacity for adaptation, and therefore its power to resist those unfavourable conditions in the environment which make for disease. Disease is regarded as a disintegration of the organism; healing as a reintegration of it.

But whilst the body is in this sense one and indivisible, it is not a mere sum of its constituent parts. The organism is more than this—it is a resultant or synthesis, a quid novum, which must be studied both in health and disease, as a whole. This individualistic outlook is characteristic of Hippocratism, both new and old. It is, however, another plank in the neo-Hippocratic platform that whilst the human body is one and indivisible, no two human beings are alike. Man is not one but a diversity of creatures. One man differs from another, not only in his inborn hereditary character, but morphologically in his "anatomical personality," functionally in his "physiological personality," and, most of all perhaps, psychologically, in his mental and nervous reactions and peculiarities. Hence there arises a restoration of the idea of constitutions, which played so large a part in Hippocratic practice, and which has never entirely disappeared from medical thought. It is a doctrine of constitutions, however, no longer based upon the supposititious four humours, but upon measurable morphological and functional differences in individuals and upon the results afforded by biochemistry and endocrinology.

Of the three factors which go to make up personality or the "human biotype"—morphological, neurochemical, and psychological—by no means the least importance is attached by the adherents of neo-Hippocratism to the last. It is, indeed, one of the most significant dogmas of the school that the mental factor in disease must never be lost sight of, as it has so often been both by the "solidists" and by the exponents of "experimental medicine," but that, on the contrary, it is of the first importance to consider it in any effort to restore the whole man to health.

If this is the direction in which contemporary medicine is moving, it follows surely that fresh demands will be made upon clinical observation, though we may have to look at our material in new ways. The clinician will be restored to his pride of place, for it is he alone who can consider the patient as a whole. Clinical intuition and judgment, so often disparaged by the experimentalist, will rise again in esteem as the faculties by which alone the different factors concerned in the disintegration of the personality can be evaluated, whilst the methods of the laboratory will be reserved for confirmation and correction.

The new outlook will also demand a new anatomy—an "individual" anatomy, which will take account of the great morphological variations which may yet fall within the limits of the normal; and a new clinical physiology, which will study the functional variations in human beings and the reactions of different individuals to changes in the environment. In this way the material will be gathered for what the neo-Hippocratists call "the science of the individual."

New methods of treatment also must follow, along with a reintroduction of older methods which have fallen too much into disuse. Treatment by protein-shock and by blood transfusion and a revived interest in blood-letting are some of the results of neo-humoralism, and the employment again of what used to be called antidyscrasic methods and of alteratives may follow. At all events, the neo-Hippocratic attitude to disease is more hopeful than the feeling of therapeutic impotence engendered by the doctrines of the morbid anatomy school.

The Need for Bridge-makers and Generalisers.

I have dwelt at some length on what appears to be the orientation of medicine to-day and the fresh scope which it offers for observational methods, but, of course, all prophecy is vain. The invention of a new instrument or of a new method might suddenly do as much for medicine as the telescope did for astronomy, or the introduction of logarithms for mathematics. It may be that we are on the eve of some such revolutionary development. If it comes,

it will probably spring from outside our own science, and from the sphere of physics or chemistry, and we may have difficulty at first in apprehending it. We need, therefore, at the present day, not only observers and experimentalists, but bridge-makers who will mediate between the laboratory and the bedside, and who will interpret and apply the work of the pure physiologist, physicist, or chemist, in so far as it bears upon practical medicine. Such men have always been few, and they must tend to get fewer as the sciences ancillary to medicine become more and more specialised; but the greater the divorce of medicine from pure science, the more are such bridge-makers necessary. How they are to be found and trained, and what position they are to occupy, are questions for the future, but that men capable of acting as liaison officers in the scientific army are necessary there can be no doubt. Nor can it be doubted that they could contribute materially, if not spectacularly, to the advance of medicine.

But most of all we need thinkers. Observation and experiment can give us facts, have indeed given us too many facts. What we require is men with imagination, men of the contemplative type of Harvey, fertile in hypotheses, who can see the inter-relation between the facts and who can bind them into manageable sheaves and induce from them those generalisations which we call natural laws.

Great generalisers, of course, are men of genius and cannot be produced to order. They flourish in some epochs more than in others, for there are, as Bacon said, waste tracts in time as well as in space. It may be that we are in such a waste tract now. Certainly men of great imaginative genius do not seem to be relatively so abundant as they were in the time of Harvey; perhaps the intellectual climate of to-day does not favour their appearance. I have already spoken of the restlessness and distractions of our day and their unfavourable effect on thought, and one might add to this obstacle the contempt for the humanities and for pure knowledge characteristic of a civilisation directed to merely material ends. It may be doubted, too, whether our present methods of education are favourable to the production of men of the type we most need. To give up early the humane studies and take to specialism is not the way to train the imagination, and tends to result in the production of skilled technicians rather than of educated men. Be this as it may, there is reason to expect that the clinical atmosphere will be more favourable to the production of generalisations than that of the laboratory. For the gifts of judgment and insight, the power to see the wood and not merely the trees, so necessary for fruitful generalisation, are just those required by the diagnostician. The clinical atmosphere, however, must be a wide one, for specialism is not conducive to the large and general view.

I would conclude by urging upon all the toilers in the field of medical science the necessity for unity. We need every worker, whether at the bedside or in the laboratory, who is sincerely seeking the truth as Harvey understood it, for in the house of Science there are many mansions. Let us not say I am of Paul; and I of Apollos, and I of Cephas; let the experimentalist not despise the clinical observer as superficial, nor the clinician the laboratory worker as narrow, nor let both contemn the thinker as visionary and unpractical. Let me rather exhort all, as I am bidden this day in Harvey's name to exhort the Fellows of this College, that they continue in love and affection amongst themselves.

THE SERUM THERAPY OF PLAGUE.

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and

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Although bubonic plague has been raging in India for nearly 35 years, its treatment has hitherto remained symptomatic. It is true that a considerable measure of success has attended the prevention of the disease by the use of Haffkine's prophylactic, but attempts, whether in India or elsewhere, to produce a curative serum have hitherto been disappointing. That great desideratum, a bactericidal drug which shall effect sterilisation by intravenous medication, has been sought assiduously, but not found. Work on these lines has been carried on in the Haffkine Institute, and a number of substances—particularly of the mercuri-phenol group—have been synthesised by Caius and others of this laboratory, but even when they have been found in vitro to possess very high bactericidal action on *B. pestis* this action has not been found transferable to the living animal.

Haffkine's vaccine, whether plain or sensitised, has likewise been found to be ineffective once the course of the disease has started. The successful results recorded by d'Herelle in Alexandria in 1925, following the use of his anti-pest bacteriophage, raised great hopes, but when this remedy was subjected to a careful trial in India it proved ineffective and did not influence either the course of the disease or the case-mortality. Successful results have been recorded from the use of plague serum outside India, but when this method has been used in Indian hospitals the results have not been so satisfactory (vide Table I.). Whether this is due to the greater virulence of *B. pestis* in India or to some other factor is not clear, but d'Herelle, in his work on plague-phage, found that strains of *B. pestis* isolated in India were much more virulent than those from other sources.

A careful analysis of the results obtained by the use of various preparations of sera in our hospitals during the years 1897–1912 showed that their administration was attended by a reduction in case-mortality of not more than 7 to 10 per cent. The Advisory Committee on Plague Investigations in India reported in 1913 that, as a result of an inquiry into the matter, "the administration of the available sera is not a practical means of bringing about any material diminution in the mortality from plague; it may well be that better results will be obtained if the treatment could be commenced within a few hours of the onset of the disease; this, however, is in the great majority of cases impossible in ordinary hospital practice." The figures relating to these trials are given in Table I.

Choksy (1923), of Bombay, who has had unrivalled experience of the treatment of plague in India, found a moderate reduction of 10 to 20 per cent. in case-mortality from the use of anti-pest serum, and urged further research regarding its manufacture, on the ground that "it is the only remedy that holds out

* This investigation, which has been carried out during 1927–31, has been financed throughout by the I.R.F.A., to whom we are indebted for permission to publish these preliminary results.

any hope of reducing the excessively high case-mortality which has so markedly characterised the epidemics at Bombay."

In 1927 a fresh attempt was made at the Haffkine Institute to approach this problem, and one of us (B. P. B. N.) was put on special duty under the auspices of the Indian Research Fund Association to carry out the investigation. Our previous work on plague vaccines showed us that the first necessity is to use the most virulent strains of *B. pestis* available, and to see that they retain their high degree of virulence throughout the process of vaccine manufacture.

TABLE I.

Compiled from the Reports of Bannerman and the Advisory Committee, Plague Investigations in India. Conditions of trial were reasonably accurate, controls being strictly comparable with the serum-treated.

Various sera tried in plague hospitals.	Years.	Treated.		Controls.	
		Cases.	Case-mort. %	Cases.	Case-mort. %
Yersin's ..	1897–1907	226	74·3	231	70·5
,, ..	1908–1910	146	65·1	146	71·9
Haffkine's ..	1897–1898	100	+14·0*	100	—
Lustig's ..	1897–1903	608	71·7	609	79·1
Terni's	1901–1904	110	80·9	110	81·8
Brazil's ..	1902–1904	70	82·8	70	85·7
Rowland's ..	1911–1912	76	68·4	76	77·6

* Mortality 14 per cent. higher than in controls.

These requirements we summarised as follows: (1) the immunising value of a vaccine is largely dependent on the virulence of the strain employed for its preparation; (2) strains isolated either from human cases or from experimentally infected rats exhibit individual variations in virulence; (3) emulsions made from plague-infected spleen are more virulent than those obtained from cultures on agar or in broth; (4) virulence of the strain is lost wholly or in part under prolonged cultivation on artificial media; (5) virulence of the organism is modified by passages from a highly susceptible animal into animals of relatively low susceptibility; and (6) an avirulent strain produces a vaccine of low potency.

The next desideratum in the production of serum is the choice of an animal which is naturally susceptible to the pasteurella group of organisms or which is readily susceptible to *B. pestis* by inoculation. Hitherto the horse has been the animal of choice, and the anti-plague sera of Yersin, Roux, Kolle, Lustig, and others were made from this animal. Haffkine (quoted by Bannerman, 1905) found that sheep produced a better serum than horses, whilst Terni (quoted by Bannerman) in Messina produced a more potent serum from mules and cattle than from horses. To what extent the susceptibility of an animal to infection by a particular organism influences the production of a potent serum is a subject which seems to have received little attention, but we decided to discard the horse and to attempt the production of serum from bovines and sheep, on the ground that they are animals naturally liable to pasteurella infection.

For convenience, we first used rabbits, which are highly susceptible to plague and to other pasteurella infection by laboratory methods, and we were able to immunise these animals to a point when they would withstand a dose of one agar slope a week of living virulent plague bacilli by intravenous injection over a period of two years. Incidentally, we found that immunisation by the subcutaneous route produced a lower grade serum than by the intravenous route. Serum from these immunised rabbits was then used as a curative measure in other plague-infected rabbits. The serum was administered in quantities not exceeding 2 c.cm., either as a single dose or in similar amounts at intervals of 24 hours, with the results shown in Table II.

TABLE II.

Time of administration of serum after infection.	Infected rabbits.	Mortality within 30 days after infection, per cent.
Immediately after ..	34	0
24 hours ,, ..	40	0
48 ,, ,, ..	43	9·3
72 ,, ,, ..	48	31·2
96 ,, ,, ..	25	32·0
Controls	33	94·0

From this it will be seen that all the animals were cured when the serum was given up to 24 hours after infection, and even when treatment was delayed until 96 hours after infection, when the animals are severely ill or even moribund, the serum saved two-thirds of the rabbits as compared with the controls. This experiment showed us that it was possible to manufacture an anti-plague serum of high curative value in animals of the same species, and the next thing to attempt was to produce serum from a large animal which would act similarly on those of a different kind.

Sheep were then tried, and were found to be very susceptible to plague. We inoculated 12 sheep with intravenous doses of virulent *B. pestis* varying from 0·003 mg. to 0·018 mg. of spleen substance of a rat which had died of plague. Six of the sheep died, five within 11 days of infection, with signs of acute plague. We now began the immunisation of sheep, using virulent cultures intravenously in graduated doses at weekly intervals, working up from 1/20th of an agar slope to 50 agar slopes at a dose. In the course of this very severe test most of the sheep died, and at the end of 16 months only three remained out of the original 21 animals. This sheep serum was then tested for its curative properties, side by side with the anti-plague serum of the Pasteur Institute at Paris, on a batch of 800 infected Madras rats. The results are seen in Table III.

TABLE III.

Time of administration of serum after infection.	Dose in c.cm.	Sheep serum.		Pasteur Institute serum.		Controls.	
		Rats.	Mort. %	Rats.	Mort. %	Rats.	Mort. %
Immediately after	1	100	13·0	100	52·0	85	88·2
24 hours after ..	1	100	43·0	100	83·0	100	90·0
	2	100	23·0	100	72·0	100	91·0
	3	100	32·0	100	77·0	100	97·0
Total	—	400	27·7	400	71·0	385	91·7

The results show that sheep serum is about two and a half times as potent as the Pasteur Institute serum, and saves the lives of about two-thirds of the infected rats, even when its administration is delayed for 24 hours.

Owing to the heavy mortality amongst sheep and their relatively small yield of serum, we next turned our attention to calves. We began with two eighteen-months-old calves weighing each about 300 lb. and injected them with living virulent plague cultures by the intravenous and subcutaneous routes. The latter gave too severe local and general reactions, so

subsequently the intravenous route was used. As in one calf the dose was too rapidly increased (it died after the seventh injection when 40 agar slopes were given in a single dose), the other calf received more gradual doses, and it survived. It was bled at the end of 12 months when it had received 38 intravenous injections, beginning with one-fifth of an agar slope and ending with 100 slopes at a dose. The therapeutic value of its serum was then tested on 250 rabbits and 40 controls, side by side with the anti-plague serum of the Pasteur Institute of Paris. The results are shown in Table IV.

TABLE IV.

Time of administration of serum after infection.	Calf serum.		Pasteur Institute serum.		Controls.	
	Rabbits	Mort. %	Rabbits	Mort. %	Rabbits	Mort. %
48 hr. after, 1 c.cm. on 3 suc. days..	50	18·0	50	52·0	10	100·0
72 hr. after, 2 c.cm. on 3 suc. days..	50	24·0	50	64·0	10	100·0
72 hr. after, 1 c.cm. once	25	24·0	—	—	10	100·0
72 hr. after, 2 c.cm. once	25	16·0	—	—	10	100·0
Total	150	20·7	100	58·0	40	100·0

suc. = successive.

We regarded these results as very promising, in that our serum saved 80 per cent. of rabbits compared with the controls, and that such a small dose as 2 c.cm. saved over 80 per cent. of rabbits in which the infection had remained unchecked for 72 hours. The Haffkine Institute serum was nearly three times as potent as that prepared by the Pasteur Institute of Paris.

At this stage, acting on a suggestion of Dr. G. F. Petrie, of the Lister Institute, we carried out a comparative test on the value of their serum with the Haffkine Institute and other anti-plague sera. This experiment involved the use of 1768 Madras rats. The results are seen in Table V.

TABLE V.

Sera tested.	Protective value.	Antitoxic value.	Curative value.
	Rats used—		
	560	650	558
Unconcentrated.	Mortality, per cent.		
Lister Institute—			
"Armistice"	100·0	43·0	93·0
"Rowland"	29·0	30·0	39·0
Pasteur Institute.. ..	70·0	52·0	65·0
Haffkine Institute—			
Sheep	0	0	3·3
Calf	10·0	0	5·0
Normal horse	97·0	90·0	93·0
Concentrated—			
German "A"	42·5	—	77·5
German "B"	45·0	—	65·0
"Rowland"	20·0	—	37·5
Reconcentrated—			
"Rowland"	15·0	—	81·6
Controls	97·5	95·0	92·5

These results showed that the Haffkine Institute sera had much greater protective, antitoxic, and curative value than any of the other sera. The reconcentration of the Lister Institute serum "Rowland" appears to lessen its curative property very considerably.

AGGLUTINATION AND PRECIPITATION TESTS.

The normal sera of sheep, calves, and horses do not agglutinate the plague bacillus. The immune serum from sheep agglutinates living plague bacilli in a dilution of 1 in 64, that from calf in a dilution of 1 in 256, while that from the horse obtained from the Pasteur Institute and the Lister Institute fails to agglutinate these bacilli even in a dilution of 1 in 2. Experiments carried out with the filtrate of a six weeks' broth culture of *B. pestis* showed the presence of precipitins in the sera of immunised sheep and calves. These precipitins were absent from the anti-plague sera obtained from the Pasteur Institute and the Lister Institute, and also from normal sera of sheep, calves, and horses. Thus the anti-plague sera of the Pasteur Institute and the Lister Institute contain neither agglutinins nor precipitins for our local strains.

With this preliminary work as our guide, we were ready to undertake the crucial experiment on the attempted cure of human plague. By February, 1931, we had five sheep, three bullocks, and four buffaloes fully immunised. They had received 35 to 45 injections during the preceding 12 months, having reached a final dose of 100 agar slopes at each infection in the case of sheep and 200 slopes for buffaloes and bullocks. Before using the serum for human cases we carried out a short experiment to ensure the stability of the stored serum. Rabbits were given a dose of 1 c.cm. on three consecutive days, 48 hours after the infecting doses of *B. pestis*. The results were:—

Bullock serum ..	11 rabbits ..	mort. %	18·0
Buffalo serum ..	18 „ ..	„	11·1
Controls	8 „ ..	„	100·0

These results satisfied us regarding the retention of potency.

Use of the Serum in Human Plague.

An outbreak of plague at Hyderabad (Deccan) furnished an opportunity to try the effect of our serum on human cases. By the kindness of Colonel Norman Walker, I.M.S., and the staff of the Plague Hospital, we were able to carry out some observations on scientific lines. At first every alternate case admitted to the hospital was given serum and the control case treated with all the other usual therapeutic measures except serum. Later, every third admission was taken as a control for, as the efficacy of the treatment became apparent, much pressure was brought to bear on us to abandon the use of controls, and medical men refused to send cases unless serum treatment was guaranteed. We were able to observe the course of the disease in 76 cases which could be divided into three classes: (*a*) cases with heavy *B. pestis* septicæmia; (*b*) cases with light septicæmia or pure bubonic cases; and (*c*) cases diagnosed clinically as plague but not bacteriologically confirmed.

Of the 76 cases, 43 were treated with serum, with 15 deaths, and 33 controls without serum, of which 23 died. Table VI. shows the disposition of the cases.

Regarding Class A, the septicæmic class, it has always been held that the presence of any considerable number of *B. pestis* in the circulating blood was the invariable presage of death. A reference to Table VII. will reveal that all previous experience in India shows that such cases gave 100 per cent. mortality, and our 17 control cases all died, whereas four out of 15 recovered under serum treatment. Apart from recovery, some striking bacteriological

observations were made on cases which ultimately succumbed, in that the septicæmia was observed to lessen or to disappear entirely under serum treatment, whereas in cases which received no serum septicæmia, once established, increased up till the

TABLE VI.

Class.	Cultural diagnosis.		Under serum treatment.		Controls (without serum).	
	Bubo.	Blood.	Cases.	Deaths.	Cases.	Deaths.
A	+	+ + +	10	7	8	8
	−	+ + +	1	1	3	3
	+	+ +	3	2	4	4
	−	+ +	1	1	2	2
Total			15	11 (73·3%)	17	17 (100·0%)
B	+	+	7	1	3	2
	−	+	1	0	1	1
	+	−	11	3	4	1
Total			19	4 (21·0%)	8	4 (50·0%)
C	Clinically plague, not bacteriologically confirmed.		9	0	8	2 (25·0%)

+ =less than 10 colonies in 0·25 c.cm. of blood.
+ + =less than 100 ,, ,, ,,
+ + + =100 colonies and over ,, ,,

time of death. Death in the former group of cases was attributable to myocarditis or other toxic manifestations resulting from the previous septicæmia.

Class B, which includes the cases of moderate severity, also yielded interesting information, though the numbers are very small. It is in this class that we should expect to save the largest percentage by serum treatment. It includes the early or slight septicæmic cases (those with less than ten *B. pestis* in a quarter of a c.cm. of blood) and the bubonic cases without generalised infection at the time of examination. The factor responsible for death or recovery in plague is probably septicæmia and, if the infection remains localised either naturally or as a result of serum therapy, the recovery of the patient may be expected. We believe that the prompt administration of serum will prevent this blood infection and, as we have shown, may sterilise the blood even when early septicæmia has occurred. Thus in the small group of eight cases with early septicæmia, seven recovered under serum treatment, whereas only one out of four recovered without serum. The relationship of septicæmia to recovery under serum therapy is set out in Table VII.

TABLE VII.

Septicæmic cases in hospital admissions.		Berestneff and Mayr, Bombay, 1901. Lustig's serum.				Plague Commission, Bombay, 1908–12. Sera of Pasteur Inst. and of Lister Inst.			
Class.	Cultural diagnosis of blood.	Tr.	Mort. %	Cl.	Mort. %	Tr.	Mort. %	Cl.	Mort. %
A	+ + +	6	100·0	9	100·0	75	100·0	81	100·0
	+ +	9	100·0	5	100·0	15	100·0	24	100·0
B	+	28	78·6	9	77·7	47	74·5	47	74·5
B + C	0	28	71·4	10	50·0	85	25·9	70	34·3

See note under Table VI. Tr. =treated; Cl. =control.

These results show that in former experiments carried out in India three out of every four cases died with the mildest or earliest degree of blood infection, whilst of those which have had more than 40 *B. pestis* per c.cm. of blood every case has died.

Class C included 17 cases of undoubted plague from which *B. pestis* was not recovered; all nine cases treated with serum survived, whilst two out of eight control cases died.

We began by giving doses of 100 c.cm. of serum, but we very soon found that this large amount of protein, when injected intravenously in one dose, was sufficient to embarrass if not to endanger the heart already poisoned by plague toxins. The fact that two cases in Class B died within two hours of injection suggests that these large doses may have precipitated the fatal result. Subsequently the dose was reduced to 60 c.cm. on admission, with a further dose of 40 c.cm. on the next day. In three cases repeated doses had to be given for several days, and it appears that if this practice could always be carried out more cases might be saved. From the clinical point of view the improvement of some cases under serum treatment was remarkable, the fever going down, eyes becoming clear, delirium disappearing, and the heart improving in tone within a few hours of the administration of the serum.

Remarks.

In this paper we have endeavoured to give a brief account of the laboratory work which led up to the use of this anti-plague serum on human cases and, whilst the former shows conclusively that a potent serum has been produced, the human experiment, though very favourable, is inconclusive, in that the numbers were too small to carry statistical weight. The fact that the plague season in India has ended for the time being, and the removal of one of us (F. P. M.) to another sphere of duty, decided us to publish these results in the form of a preliminary report.

It may be argued that, as the epidemic was on the decline, our results were thereby vitiated, but the force of that argument is lessened in that we compared our cases with controls admitted alternately to the plague wards, and the careful observations on septicæmia in themselves provided a still more accurate standard of comparison. The paucity of cases was unavoidable, and though we made every effort to extend the range of observation during the plague season just past we were unable to find any area where a sufficient number of cases could be got together under conditions suitable for a more conclusive scientific experiment.

Conclusions.

1. It has been found possible to produce a more potent anti-plague serum than any that has hitherto been available. In preparing this, attention was paid to three points which are considered to be of importance—namely, the choice of the animal, the virulence of the strain used, and the method of immunisation.

2. Cattle were chosen rather than horses, on the ground that they are naturally susceptible to organisms of the pasteurella group.

3. A highly virulent strain of *B. pestis* was used in the production of serum.

4. The serum of immunised cattle was found to possess good agglutinative power and to be possessed of antitoxic as well as antibacterial properties.

5. The use of this serum as a curative measure resulted in the saving of the lives of a high proportion of rats and rabbits as compared with the controls.

6. In all these desirable properties the Haffkine Institute serum was shown to be far superior to any other anti-plague serum tested.

7. When applied to a small human epidemic the results were very promising. Out of a total of 76 cases, 43 were treated with serum, generally in one dose, and of these 15 died, whilst of the controls (alternate cases) 23 out of 33 died. Several cases with advanced *B. pestis* septicæmia recovered, and 7 out of 8 cases with early septicæmia survived, as compared with an invariable fatality in the former group and 75 per cent. mortality in the latter. We anticipate that the use of the Haffkine Institute serum will save the majority of lives in Classes B and C, and favourable conditions for a large-scale trial on these lines are awaited.

THE ASPHYXIAL ELEMENT IN GAS-OXYGEN ANÆSTHESIA.*

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IN a previous paper[1] I have given the result of a series of 200 cases anæsthetised by nitrous oxide and oxygen. The present paper brings the number to 553, which may be classified as follows:—

Upper abdominal (61).—Gall-bladder, 23; gastro-enterotomy, 13; perforated gastric and duodenal ulcer, 16; pyloroplasty, 2; partial gastrectomy, 1; high laparotomies, 6.

Lower abdominal (175).—Appendicectomy, 136; acute obstruction, 1; ovariotomies, 3; hysterectomies, 2; hysterotomies, 2; laparotomies (various), 31.

Non-abdominal (317).—Hernia and hydrocele, 42; bone plating and wiring, 20; anal and rectal, 21; suprapubic, 7; cystoscopies, 5; amputations (various), 6; nephrectomies (lumbar), 15; empyema, 5; radical amputation (breast), 7; neck operations, glands, &c., 13; mouth operations, 9; dental, 41; thyroidectomies, 3; ophthalmic operations, intra-ocular, 2; extra-ocular, 2; mastoid, 1; various, 118.

With the exception of a few of the earliest cases in the series, and a number of intratracheal cases shortly to be referred to, no agents other than nitrous oxide, oxygen and carbon dioxide were used. The figures show that a very wide range of cases has been dealt with, including not only a variety of operations, but all sorts and conditions of patients, taken without any attempt at selection, just as they arrived in the anæsthetic room. Particularly I would call attention to the abdominal, the dental, and the ophthalmic cases. Of the last-named, two were for buphthalmos, a condition of increased ocular tension involving an operation of great delicacy. Though the total number is small, I think the series must be regarded as a very severe test of any anæsthetic agent.

I have no reason to modify my earlier opinion of the overwhelming advantages of gas-oxygen in the first and third stages—i.e., the induction and post-operative periods—as compared with ether and chloroform; the evidence of patients, and also of ward sisters and nurses, makes this so clear as scarcely to need discussion. During the operative stage, however, it has not been possible to demonstrate such marked superiority; the most rapid enthusiast could never make such a claim. Nevertheless, in spite of assertions appearing from time to time in medical journals and in text-books to the effect that gas-oxygen cannot be relied upon to give adequate anæsthesia in robust adults, my series has shown quite conclusively that it is possible with this agent to produce relaxation sufficient to allow of even high abdominal operations being carried out on any kind of patient.

Upper abdominal operations provide the crucial test of any anæsthetic agent; in no other group of cases is such complete relaxation required. Of this group of cases in my series I would say that in one-third relaxation was good, and, as we say, "the patient took the anæsthetic well." In another third the relaxation was satisfactory, but the patient did not perhaps "take the anæsthetic so well," and the anæsthetist rather "sweated" (I know of no more descriptive term) over the effort to keep things going. In the final third the course of the anæsthetic was jerky, the anæsthetist did not succeed in completely eliminating those catchings of the breath and spasmodic contractions of the recti muscles which occur, for example, when the stomach is pulled forward or the gall-bladder pressed upon—little troubles with which some of us are only too familiar—and before edges of peritoneum could be brought together in the lax, easy way that the surgeon desires it was necessary to resort to secondary saturation, which, though remarkably effective, requires momentarily a very deep, and probably dangerous, asphyxiation. These cases I cannot look back upon as being by any means satisfactory. I kept notes of them, and I think that one-third good, one-third reasonable, and one-third bad represents fairly the results in upper abdominal surgery during the operative period. Even with the worst of them recovery was extraordinarily rapid, and, personally, I never failed to feel a glow of satisfaction at the condition of these patients in the post-operative period as compared with those that had been etherised or treated with other toxic agents.

COMPARISON WITH OTHER ANÆSTHETICS IN UPPER ABDOMINAL SURGERY.

Ether, I think, is generally recognised as the agent capable of producing the most complete relaxation, and may be usefully selected for comparison. For several years I used ether as a routine agent, by open, closed, and semi-closed methods, with and without local anæsthesia, and though I did not then take such careful notes as I have since done with gas-oxygen, I would estimate that in not less than one-third the relaxation, if one may judge by the crucial test of peritoneal suture, was not satisfactory to the surgeon or a source of complacency to myself. Of course, the personal factor cannot be eliminated, and it is likely that other anæsthetists would claim better results, but during visits to theatres in different parts of the country I have seen others struggle with the difficulties which I have so often encountered.

My series of upper abdominal cases includes 16 in which gas-oxygen was given by the endotracheal route, and these approached more nearly to the ideal than any others I have given. This method, in my opinion, is the one which is most likely to satisfy the immediate needs of the surgeon, just as, incidentally, as soon as the trachea is entered, it eliminates nearly all the troubles of the anæsthetist. The technique is undoubtedly difficult, since probably few anæsthetists possess the dexterity necessary to effect the passage of a catheter through the vocal cords without having recourse to an anæsthetic less evanescent than gas. In more than half of my own cases I found it necessary to use chloroform (which I preferred to ether) during induction, to get a sufficiently lasting relaxation of the throat muscles. These cases thus form an exception to the rest of the series, in which no anæsthetic other than nitrous-oxide was used. Heavy preliminary "doping" is neither necessary

* Read before the Forfarshire Medical Association.

nor desirable, for I found that an injection of morphine sulphate gr. ⅓ gave the best results with average adults, whilst youngsters under 16 years of age were better without any preliminary medication at all.

The Blueness of the Patient.

With the lower abdominal and non-abdominal cases of the series, results proved entirely satisfactory, and, speaking generally, I am quite certain in my mind that gas-oxygen would have been taken up and used as a routine long ago but for the fact that it is impossible with the majority of patients to secure the necessary relaxation without producing some degree of cyanosis. I do not wish to underestimate this feature—in fact it is a point that I am most careful to emphasise, because there seems to be a marked difference of opinion as to what constitutes cyanosis. I have seen patients turn blue at times when the anæsthetist has indignantly denied the presence of cyanosis. Under this term must be included all deviations from the normal pink or red to the blue or "dusky" side. With very few exceptions, all the patients in this series were at some stage of the operation so definitely cyanosed that blood and tissues assumed an ugly blue colour. This, without doubt, has been the chief objection to its use, not only by anæsthetists, but also by surgeons. It is easy to understand: tradition, training, teaching, since the earliest days of general anæsthesia, have insisted on the application of two main principles, "Keep the airway clear" and "Maintain a good colour." Every student and house-surgeon has had drilled into him that any sign of blueness must be investigated and corrected. To the surgeon blueness has meant congestion with consequent troublesome bleeding, so that in the ordinary way he hates the sight of blue blood.

With ether, chloroform, or any of the more recently used toxic agents this teaching is sound and good. In all cases where air is the medium whereby vapour is made to enter the lungs, or where in rectal or intravenous anæsthesia the patient is breathing pure air, there is sufficient oxygen intake to keep the blood bright pink or red. Loss of colour in these cases means, therefore: (1) an obstruction to the airway; (2) failure of respiration, circulation, or both, as the result of overdose or surgical shock. It is a sign of serious trouble, which must be instantly corrected. With such teaching I most heartily agree.

The blueness of gas-oxygen anæsthesia, however, is a totally different thing. Nitrous oxide has been shown to possess anæsthetic properties as compared with inert gases like nitrogen or hydrogen, but it is such a weak anæsthetic that, as we know, in order to secure the maximum concentration it is the custom to eliminate air, with its high percentage of nitrogen, and to use instead oxygen from cylinders. Even when the oxygen in the mixture has been reduced to the bare minimum necessary to maintain a pink colour, the concentration of gas so obtained is insufficient in the ordinary way to give anything like adequate anæsthesia unless we reinforce its action (1) by adding additional anæsthetic, such as ether; (2) by heavy preliminary doping and use of local agents[2]; or (3) by increasing the pressure and concentration of nitrous oxide, which means still further reducing the percentage of oxygen, when a new factor is introduced—viz., the addition to the blood of an asphyxial element.

There are many anæsthetists who advocate and use the former method, and, personally, I do not see that there is any objection to using ether and chloroform in this way, but from my own efforts, and from observations of the work of others, it seems clear that if gas-oxygen is to be used as the medium to carry ether or chloroform, the amount of ether or chloroform so used, if the patient is to be kept a bright pink, will not be so small as theoretically indicated, and, in fact, proves to be not much less than if air were used instead. Two or three drachms or half an ounce of ether, though minimal when considered in terms of the open methods, represents a very considerable effect when used in a closed gas-oxygen apparatus, especially if rebreathing is employed. Nevertheless gas-oxygen-ether is a decidedly useful anæsthetic mixture.

The anoci-association methods[2] have much to recommend them, but certainly have not found universal favour with surgeons in this country.

The third method is the one which I have used in this series. The technical application is of importance, and requires an apparatus capable of the most accurate variation in percentage mixtures of the gases, and capable also in emergency of instantly cutting off the nitrous oxide and delivering direct to the face-piece a mixture of oxygen and carbon dioxide under sufficient pressure gently to inflate the lungs. The maintenance of a free airway is absolutely essential, and though one deliberately induces blueness, one aims to avoid congestion. So rarely, however, does blueness occur without congestion that it is difficult for a surgeon not used to this form of anæsthesia to dissociate the two. If the airway is clear, and heart and respiration are functioning without embarrassment, I do not see how congestion can occur. As a matter of fact, in my opinion, the most profuse bleeding does not occur with nitrous oxide, but in the red oozing wound which frequently accompanies open ether anæsthesia.

There are many anæsthetists and surgeons who will not tolerate blue blood simply because it is blue. They seem to object to it on cosmetic grounds. One has heard many times also the argument, "A blue colour must be bad for the patient, it means deprivation of essential oxygen." Such an argument, unsupported, leads nowhere. It cannot be doubted that sub-oxygenation is bad for the patient. Oxidation is the "flame," the very essence of life, necessary for the performance of all the vital functions, and a depression of the oxidative processes is incompatible with the maintenance of a healthy existence. But who can regard surgical anæsthesia as a healthy state? In order that the surgeon may be able to perform an operation of magnitude it is necessary that the patient be rendered unconscious, flaccid, and inert, and it is not conceivable that such a state can be produced by any benign process. All the general anæsthetic agents in common use are poisons which are soluble in the blood stream, and which act in virtue of their poisonous action on the tissue cells. Before rejecting a method of anæsthesia which requires the production of an anoxæmia it is necessary to consider the ultimate effect upon the tissues of anæsthetic substances in general.

CONCEPTION OF ANÆSTHESIA.

The amount of experimental work which has been carried out in this connexion is very large, and numerous theories have been brought forward by different workers in which coagulation, dehydration, protein precipitation, lipoid solution, osmotic changes, alterations of permeability of membrane, changes in electric potential, and other effects upon the cell have been variously advanced as predominant factors.

That the lipoid substances play a highly important part in anæsthesia is clear, but even to-day it must be admitted that we do not know exactly what constitutes anæsthesia. Most of the work has centred round the means by which the anæsthetic gains entrance to the cell, and what constitutes the essential change in the cell which destroys or reduces its excitability. This fascinating problem does not enter directly into the present discussion.

An observation of the highest importance, however, emerges clearly from the great mass of experimental findings—viz., that a constant effect of the anæsthetic substance on gaining entrance to the cell is so to interfere with its working that the ability to carry on the oxidative processes is considerably depressed. This aspect of the question has been brought out by a very large number of workers, and expressed most emphatically perhaps by Verworn, who says: "It may be considered as a firmly established fact that a process of depression is developed during narcosis which can be classified with the great group of depressions resulting from deficiency of oxygen." He shows also that "during narcosis the centres, in spite of their great requirement of oxygen, lose their capability of oxidative splitting up and consumption of oxygen."[3] In his view, general anæsthesia is equivalent to asphyxiation of the tissues. The state of asphyxiation does not, with most anæsthetics, occur in consequence of the deficiency of oxygen as such, but arises through inhibition of the oxidation processes by the anæsthetic agent. Therefore, and this is important, asphyxiation sufficient to cause anæsthesia may occur in the presence of abundant oxygen in the blood and lymph surrounding the cells.[4]

A comparatively recent and perhaps one of the most interesting conceptions of anæsthesia is that expressed by Crile in his "bi-polar theory of living processes,"[5] in which he shows that oxidation within the brain and other tissues is markedly depressed during deep ether anæsthesia.

Many workers will not accept any view as to the predominant rôle of asphyxia in the production of anæsthesia, and they have adduced evidence to show that under certain conditions anæsthesia may occur without a reduction of the oxidative processes.[6-8] Nevertheless I do not think that any one of these workers would deny that a depression of oxidative activity takes place during ordinary surgical anæsthesia. For example, R. S. Lillie[9-11] says: "It is true that the rate of oxidation in active tissues is lowered during anæsthesia, but the effect is rather a consequence than a cause of lessened activity." There is no need to labour this point—"cause" or "effect," there is abundant evidence to show that asphyxiation in more or less marked degree is present during all forms of deep surgical anæsthesia. This accounts amongst other effects for the cooling which takes place during operation. It is a well-established principle in surgical practice that the patient must be kept warm, as, for example, by raising the air temperature in the theatre, by having a hot-water chamber in the table, by exposing as little of the body as possible, and by covering with warm swabs such highly vascular structures as gut and mesentery. It is an argument against the routine use of the open ether method in which the patient inhales icy vapour through a frozen mask, and it indicates the value of warmed gases.

The association between lack of oxygen as the primary factor and depression of nervous excitability, loss of impulse, and unconsciousness, is so well established as scarcely to need comment. Clinically many examples occur to the mind, of which perhaps the most valuable in this connexion are cases of coal-gas poisoning, a condition resulting in formation of carboxyhæmoglobin which is so slowly reduced that the patient may remain for prolonged periods in a state of suboxygenation, but from which he may recover with comparatively little physical damage. Cases of anæmia and of congenital heart disease, where there is pre-existing suboxygenation, require during operation very small quantities of the anæsthetic. We know also that, wherever the normal oxidative processes of the cells are interfered with owing to lack of enzyme which results in faulty or inadequate metabolism of carbohydrates and fats, unconsciousness is liable to result. This occurs in diabetes, not only when there is insufficiency of insulin for the oxidation of sugar, but also in hypoglycæmia due to an overdose of insulin where, the sugar having been combusted, insufficient remains to undergo oxidation. The association of local oxygen-want and anæsthesia or analgesia is significant: obstruction of a main artery producing anæmia causes loss of sensation in the area affected; obstruction of veins, as produced by use of an Esmarch's bandage, also produces local analgesia. These two conditions are almost exactly opposites except for the anoxæmia which is present in both. It is well known that adrenalin reinforces the local action of such substances as cocaine, and it is likely that its action depends not only on limiting diffusion but also in virtue of the local anæmia. Cold, by reducing the local supply of blood and consequently of oxygen, produces varying degrees of anæsthesia which in the case of freezing becomes absolute, as is well illustrated during the insidious onset of frost-bite of the toes, where the part previously cold becomes increasingly more comfortable. This indeed constitutes the grave danger of frost-bite since, as a result of the local anæsthesia produced, attention is diverted from a very serious condition.[12]

THE ASPHYXIAL ELEMENT.

It would be remarkable if the close association between anæsthesia and the anoxidative state, and vice versa, were mere chance. Not only must it be accepted that surgical anæsthesia results in a tissue asphyxia, but it is reasonable to suppose that depth of anæsthesia and degree of asphyxiation form a constant ratio. Though the effect of all anæsthetic substances is to interfere with cell oxidation there seems to be an essential difference between the action of nitrous oxide as used in this series and the more poisonous agents, such as ether and chloroform. As already pointed out, nitrous oxide is a very weak agent, essentially non-toxic, and unable by itself in the absence of an anoxæmic element to produce deep surgical relaxation. Ether and chloroform produce their anoxidative effect in the presence of an abundant supply of oxygen in the blood stream. One may express the difference by means of a simile. It is possible to starve a man in two ways: one can give him abundant food and mix with the food a poison which makes him so sick that he cannot make use of the food; or one can simply withhold the food, leaving him unpoisoned and, unless the starvation has been too severe and too prolonged, he will be ready and able to make use of food as soon as it enters the stomach. In the same way, asphyxia can be produced by giving abundant oxygen and mixing with it a poison which so interferes with the tissues that they cannot make use of the oxygen, or one can simply withhold oxygen, leaving the cells unpoisoned; in this case, unless the suboxygenation

has been too severe or too prolonged, the tissues, as soon as oxygen enters the blood stream, will take up what they require to carry on the vital oxidative processes. It is known that hæmoglobin very readily parts with and takes up both oxygen and nitrous oxide, so that one can immediately be substituted for the other, but, on the other hand, the toxic effect of the poisonous substances are not so readily and rapidly eliminated on removal of the anæsthetic agent. Theoretically, then, during practical administration we should expect to find that the patient would be more easily put under, and light and deep anæsthesia more quickly corrected, with nitrous oxide than with ether or chloroform; but, on the other hand, the course of the anæsthesia would not be so smooth and even as with the latter agents. We would also expect to find with nitrous oxide that recovery would be much more rapid and after-effects less likely to persist than with ether or chloroform. This, of course, is exactly what is found clinically, as was amply demonstrated in my series, and experimentally, as shown, for example, by Crile:

"We found that in the state of deep ether anæsthesia, which interferes with the permeability of films around the cells and hence interferes with oxidation, the temperature of the brain and liver fell steadily till death occurred. On the other hand, we found that in nitrous oxide anæsthesia, which interferes with oxidation itself but does not interfere with the permeability of the lipoid films surrounding the cells, the temperature of the brain fell much more slowly."[5]

The Risks.

An obvious question is: How do the different methods compare as to safety? I wish to say at once that I entirely disagree with the all too prevalent opinion that gas-oxygen is an essentially safe anæsthetic. In my opinion there is no such thing as a safe anæsthetic—there may be a safe anæsthetist, but anyone undertaking so to interfere with the physiological workings of the body as to produce deep surgical relaxation must do so with a full sense of the responsibility involved. An anæsthetist at every operation literally takes the patient's life in his hands. I had no deaths in my series, nor did any case cause me undue alarm. It is necessary to state, however, that during the period covered by this series three deaths occurred in the Dundee Royal Infirmary at the hands of house surgeons. All of these patients could be classed as "bad risks." Risks of anæsthesia are by no means limited to gas-oxygen anæsthesia with an asphyxial element, indeed there are a number of as yet incalculable factors which remain to be elucidated in connexion with deaths from all anæsthetic agents. Certain points, however, must be referred to:—

(1) A depression of the oxidative processes means a reduction of the carbon dioxide output, and there is consequently with gas-oxygen a risk of acapnia, with resulting respiratory failure. This is actually more likely to occur with a gas-oxygen apparatus if the rebreathing tap has been closed than with, for example, the open ether method, since in the latter there must of necessity be some rebreathing under the somewhat sodden mask. Yandell Henderson's work leaves small doubt in the mind as to the effect of acapnia in the production of surgical shock[13] and, if cessation of breathing has occurred from this cause and the heart is failing, flooding with oxygen, the first instinct of an inexperienced administrator, is much less likely to be of value than the giving of carbon dioxide or, better still, a mixture of oxygen and carbon dioxide. In my opinion, no apparatus is perfect which does not carry a cylinder of carbon dioxide connected up for immediate use.

(2) It is sometimes thought that if, during gas-oxygen anæsthesia, the patient is not blue, all is well. Cyanosis, however, is not an accurate guide to the degree of anoxæmia or to the anoxidative state of the tissues[14]; a cachectic patient suffering from carcinoma, though pink, may be more deeply anæsthetised than a robust subject whose face is a rich purple.

(3) One must consider also the effect of a general anoxæmia on the heart muscle. It has been shown, both clinically and experimentally, that the heart possesses remarkable powers of maintaining a rhythmic contraction under the most unfavourable circumstances; nevertheless it cannot be doubted that lack of oxygen, if suddenly produced or severe and prolonged, must cause considerable embarrassment to the myocardium. It is likely that, before the heart muscle gives way from this cause, signs of distress will be present in the form of spasm and jactitation of voluntary muscle, but the risk of cardiac failure is a real one that must never be forgotten. It indicates the necessity for an apparatus capable of instantly correcting overdose, for careful induction, for the most alert attention during the whole operative period, for lightening the anæsthesia at every stage of the operation where complete relaxation is not required, and for reducing the total duration of deep anæsthesia to a minimum.

(4) As already indicated, the practical administration of gas-oxygen requires a comparatively complicated apparatus, and complete mastery of its working is obviously an essential for safety.

I think these four factors may account for some of the difficulties and dangers of gas-oxygen anæsthesia during the operation period. Of greater importance during the post-anæsthetic period is the risk of uncompensated acidosis with acetonæmia and all the unpleasant sequelæ. There can be no doubt that during gas-oxygen anæsthesia a disturbance of the acid-base equilibrium occurs; this has been shown to be a constant feature of suboxygenation,[14] but it occurs with all forms of anæsthesia. Crile and his co-workers have shown that during general anæsthesia there is an increase of the hydrogen-ion concentration, and that the acidity increases proportionately to the depth of anæsthesia until a stage is reached which is incompatible with life.[5] Consequently, in any case where the anæsthetic has been deep or prolonged, the risk of a severe acidosis is a real one. It is to be remembered, however, that an acute acidæmia may result during the operative stage from factors other than the anæsthetic—e.g., hæmorrhage or surgical trauma. A persisting post-operative acidosis is fortunately not common in adults, but seems to occur more readily with children.

There is still a great deal to learn about disturbances of the acid-base balance, but one thing has been clearly demonstrated—viz., that the body possesses remarkable powers of compensating any deviation from the normal. In a recent paper Findlay[15] points to the great difference between the effects of acidosis arising in the course of disease, and that experimentally or therapeutically induced where the organs are apparently healthy, as during anæsthesia. He remarks in this connexion "on the remarkable powers of the body in accommodating itself to new conditions and the completeness of these powers so long as the tissues are healthy." With gas-oxygen, as I have endeavoured to show, the tissue cells maintain their healthy state, whereas during anæsthesia with other agents they are poisoned; consequently there should be less risk of uncompensated acidosis with non-toxic nitrous oxide than with ether, chloroform, or other toxic agents. This appears to be borne out clinically. Although 90 per cent. of my cases were at certain stages of the operation deeply cyanosed, no such complication occurred. This risk of an acidosis is an argument against the deep anæsthesia theory put forward more often, I think, by surgeons than by anæsthetists.

One reason why gas-oxygen is less likely to be followed by uncompensated acidosis is that, owing to the rapidity with which changes in depth of anæsthesia can be effected, it is possible to allow the patient almost to come round during a large part of many operations—for example, during suturing

in gastro-enterostomy—and thus the total period of deep anæsthesia is usually much less than with ether or chloroform. Clinical evidence of the lessened tendency to acidosis is found in the greatly reduced amount of post-operative vomiting. This distressing condition is not abolished by gas-oxygen (as used in my series), but when it occurs it is usually less severe than with other agents, and in a very large number of cases, including high abdominal operations, it has been entirely absent. Finally the lessened risk or respiratory complications is an argument in favour of gas-oxygen that must carry considerable weight. A death on the table is a tragedy; death from respiratory complications in the post-operative period is in many quarters looked upon with a degree of complacency which is surprising; but if a patient is to die from the effects of an anæsthetic, of what possible advantage can it be that he should survive the operation only to endure two or three weeks of acute discomfort and pain? It is not reasonable to consider the relative morbidity of different agents only in terms of deaths on the table. A patient may develop an ether bronchitis followed by broncho-pneumonia, from which he may apparently recover only to develop a fatal empyema; the anæsthetist, contented with the good relaxation secured during operation, may not even know of its occurrence. Could anything be more ironical?

Nitrous oxide is non-explosive.

There are numerous factors which enter into the practical use of gas-oxygen. The question of apparatus and technique are of the utmost importance, and perhaps not the least important factor is the individual surgeon. The object of this paper, however, is merely to indicate the range of cases in which gas-oxygen may be used without the need of other agent, and to show that neither practically nor theoretically can a carefully controlled anoxæmia be regarded as a contra-indication to its use.

I must take this opportunity of thanking the surgeons whose cases are included in this series for their indulgent coöperation, more especially Mr. R. C. Alexander and Mr. R. S. Melville, for whom the bulk of this work was done.

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HOSPITAL MEALS BY CONTRACT.—During the last three months the meals for the staff of the Holgate Institution, Middlesbrough, have been provided by contract at an average weekly cost of 7*s.* 5½*d.* per head, as compared with a previous average of 13*s.* It is officially stated that the fare has given complete satisfaction by reason of its greater variety.

HARMALOL IN THE TREATMENT OF PARKINSONISM.

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Lewin,[1] as a result of pharmacological experiments, recommended banisterine, an alkaloid obtained from *Banisteria caapi*, as a remedy in nervous diseases, and reports were later made by Lewin and Schuster [2] and Beringer [3] as to its value in parkinsonism. Later, banisterine was shown to be identical with harmine, an alkaloid obtained from *Peganum harmala*, and reports as to the clinical use of harmine were made by Rustige,[4] Beringer and Wilmanns,[5] and others. By the end of 1930, a considerable number of clinical reports had been published which generally went to show that harmine favourably influences the rigidity of the muscles in post-encephalitic conditions, but that it has little or no effect either on the tremor or on the mental condition.

The effect of harmine in relieving rigidity of muscles in those conditions was generally ascribed, somewhat vaguely, to an action on the extrapyramidal tracts. Halpern, however, in two interesting papers [6] gave a different explanation. According to his observations, harmine acts in a manner entirely different to that of hyoscine, for whereas the latter has a depressant action on the extrapyramidal tract, harmine stimulates the motor cells of the cerebral cortex. According to this view, apparently, the pathological condition in parkinsonism is due to a stimulation or over-action of the extrapyramidal tracts which is subdued by hyoscine. Harmine leaves these tracts uninfluenced but, by stimulation of the motor cells of the cortex, facilitates the passage of voluntary impulses through the pyramidal tract. This explains several observations, among others the facts that harmine does not relieve tremor, whereas it does produce a curious subjective feeling of "lightness" of the muscles, and that a combination of harmine and hyoscine produce summated benefits because they act differently and on two components concerned in voluntary movement.

Whether Halpern's explanations are right or wrong, they certainly afford a more precise and reasoned explanation of the divergent action of these alkaloids than has previously been given. One of us, in early pharmacological experiments with harmine,[7] had suggested that the convulsant action produced in laboratory animals by this alkaloid is due to a stimulation of the cerebral motor cortex.

Marinesco, Kreindler, and Scheim [8] found that harmine, in normal persons as well as in those suffering from encephalitis, heightens vestibular excitability, and that it tends, though to a less extent than scopolamine, to restore to their normal values the pathological chronaxies of the nerves and muscles in parkinsonism. It is evident that the precise method of action of harmine in parkinsonism cannot yet be regarded as decided. The general opinion of those who have tried it is that it has a definite effect in improving motility. Its effect on the post-encephalitic complex of symptoms is hardly comparable to that of hyoscine or stramonium, and it has been used chiefly to supplement the action of the latter drugs. Some observers—e.g., Hill and Worster-Drought [9]—have found little or no benefit from its use

Gunn and his co-workers have recently investigated some artificial derivatives of harmine and harmaline.[10] They found that, while in all compounds investigated the actions on voluntary and involuntary muscle were similar, there were important differences in their actions on the central nervous system. This was shown especially by the fact that, whereas harmine and harmaline produce clonic convulsions in laboratory mammals, harmol and harmalol (which differ from harmine and harmaline respectively in the substitution of HO for CH_3O group) have no such convulsive effect. It seemed of interest, therefore, to determine whether harmol and harmalol would exert the same type of action in parkinsonism as harmine or harmaline. If, as Halpern suggests, the action of harmine in this condition is due to stimulation of the cerebral motor cortex, then harmol or harmalol ought to be ineffective, unless the latter alkaloids have an action on the central nervous system in man different from that which they display on lower mammals (rats, guinea-pigs, and rabbits).

To obtain evidence on this point we have made a series of observations on the effects of harmalol in cases of parkinsonism following encephalitis lethargica. The cases treated were all patients in West Park Mental Hospital, and we wish to thank Dr. F. L. Golla and Dr. Norcliffe Roberts for affording us every facility for conducting the investigation. For the supply of harmalol hydrochloride we are indebted to Messrs. Boots, Nottingham.

Harmalol hydrochloride is soluble in cold water only to the extent of about 1 per cent. This limited the dose that could conveniently be given by hypodermic injection to about gr. 4/5, which was given as two injections of gr. 2/5 dissolved in 20 c.cm. of water. If given repeatedly by mouth the drug may cause some staining of the teeth.

All the patients were suffering from chronic epidemic encephalitis, and most of them showed severe symptoms of parkinsonism. In attempting to evaluate the effects of harmalol in these cases, we were confronted with difficulties which are familiar to those who have experience in treating this type of disease. Also the dosage to begin with had to be tentative, as there was no previous experience of the use of the drug in man. Practically all the cases had been on full doses of stramonium, and this treatment had to be discontinued until the symptoms had returned and reached a stationary state before the patient was given harmalol. Observations were made on the local and general reactions to the drug; especially records were taken of the pulse-rate and blood pressure as an indication of the safety of the dosage. Gunn and Simonart had shown, in the case of laboratory mammals, that small doses produce a slight rise of blood pressure, and larger doses a fall. As a conspicuous fall of pressure was produced by doses only one-tenth of the lethal dose, there was every reason to suppose that the drug could be pushed with safety so long as there was no marked fall of blood pressure. Experience with harmalol confirmed this anticipation.

Results of Experiments.

The results of the experiments can be stated briefly. There is little to be gained by giving the results of the smaller and tentative doses.

By hypodermic injection.—Fifteen tests were made with doses ranging from gr. 1/10 to gr. 4/5. The smallest of these doses generally produced a slight rise of blood pressure, the largest a fall of not more than 10 mm. Hg. accompanied usually by slowing of the heart-rate by about ten beats per minute.

No pain or local irritation was produced at the site of injection, and no toxic symptoms of any kind were produced. In regard to the nervous condition, the only primary alteration observed was a decreased muscular rigidity. With gr. 4/5, two cases showed no change, three slight relaxation, and two marked relaxation. In no case was the rigidity completely abolished. Cases showing definite decrease of rigidity showed also improved voluntary movement. In no case was the tremor lessened, whatever its type; and we had the impression that the decreased rigidity enabled the tremor to manifest itself more easily in some cases. There was no evidence of euphoria or of improvement in the mental condition. There was no reduction in the sialorrhœa, and sweating was increased in some cases.

The effect on rigidity reached a maximum in about 45 minutes, and began to pass off again in about two hours, though slight improvement lasted as long as 24 hours in some cases.

By oral administration.—No nausea or vomiting and no toxic symptoms were produced by any dose up to grs. 12, the largest given. The effects generally resembled those produced by hypodermic injection with the following differences. No marked effects were produced by doses less than about grs. 8. With doses of grs. 8–12 there was usually no significant change in blood pressure, sometimes there occurred a rise, sometimes a fall of blood pressure, in neither case of over 10 mm. Hg. With doses of about grs. 10 the effects were similar to those previously described as occurring after hypodermic administration. The only positive effect was the diminution in the rigidity of the muscles. The action began to pass off usually in three to four hours, though in some cases slight effects were distinguishable up to 12 hours or even longer.

In a few cases in which harmalol was given to patients already receiving stramonium, a slight further relaxation of muscles occurred over and above that due to stramonium.

So far as these preliminary observations go, they tend to suggest that harmalol produces much the same effect as harmine in relieving the muscular rigidity of parkinsonism. In a few cases in which harmine and harmalol were compared in the same patient, we failed to find any material difference between the two alkaloids. The fact that harmalol is devoid of stimulant action on the cerebral cortex of laboratory mammals, and nevertheless has an effect on the muscular rigidity of parkinsonism similar to that of harmine, rather throws doubt on the explanation that the action of these alkaloids in man is due to stimulation of the cerebral motor cortex, though this would have afforded a feasible explanation of the action of harmine itself. Our observations are too slender to admit of profitable conjectures as to their seat of action.

Though harmalol, like harmine, seems to have a definite effect in relieving the rigidity of the muscles, with consequent improvement in voluntary movements, it produces no general alleviation of the symptoms-complex of parkinsonism at all comparable with that produced by hyoscine.

Conclusions.

Harmalol hydrochloride, in doses of gr. 4/5 hypodermically or grs. 8–12 by mouth, has a slight but definite effect in relieving muscular rigidity in parkinsonism. It has no beneficial effect on the tremor or on the mental condition and does not

(*Continued at foot of opposite page.*)

CLINICAL AND LABORATORY NOTES

CASE OF ACUTE ASEPTIC MENINGITIS.

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PHYSICIAN TO THE HOSPITAL.

The recent publication by Dr. J. H. Gibbens of some cases of acute aseptic meningitis in THE LANCET (July 4th, p. 12) encourages us to describe an example of this condition in an adult. Dr. Gibbens's patients were all under the age of 12.

A male, aged 34, in previous excellent health, was admitted to the Hampstead General Hospital on July 8th, 1931, complaining of headache and vomiting. His illness began suddenly on June 30th with malaise, severe headache, and pains in the limbs. His doctor had observed that pyrexia, ranging from 101° to 103° F., was present for the first three days of the illness, and that after two days of general improvement all his symptoms recurred with increased severity, when for the first time complaint was made of stiffness in the neck and vomiting. Lumbar puncture had been performed; the cerebro-spinal fluid not under increased pressure was opalescent, containing an excess of protein and capable of a slight reduction of Fehling's solution. The total cell count was 280 per c.mm., with a differential proportion of 40 per cent. polymorphs, 30 per cent. small mononuclears, and 30 per cent. endothelials. Some coliform bacilli—presumably a contamination—were found on culture.

On admission, although obviously very ill, he was fully conscious with unimpaired cerebration. The temperature was 98·8° F., cardiac-rate 56, respirations 20. Physical signs were inconspicuous; all the cranial nerves were unaffected. Although the muscles at the back of the neck were rigid, Kernig's sign was not elicited. The cerebro-spinal fluid was not under pressure and exhibited the following characters: Appearance, turbid with a fine clot; total cell count 280 per c.mm., polymorphs 17 per cent., lymphocytes 83 per cent.; total protein, 160 mg. per cent.; globulin increased; sugar within normal limits; chlorides, 700 mg. per cent.; Wassermann reaction negative; no organisms identified in smear or culture.

During the two days following admission, vomiting persisted but terminated abruptly, although headache and stiffness of the neck continued. Bradycardia and apyrexia were maintained. Examination of the blood showed the presence of slight secondary anæmia. The total leucocytes were 16,000 per c.mm., of which 78 per cent. were polymorphs. Improvement began and steadily continued, and within ten days all symptoms had disappeared. By this time the cerebro-spinal fluid, still turbid, contained 250 white cells per c.mm., 90 per cent. of which were lymphocytes. The total protein was now 120 mg. per cent., chlorides were 715 mg. per cent. Cultures sterile. A week later the fluid was clear, colourless, with eight cells per c.mm., all lymphocytes. Total protein 95 mg. per cent., globulin very slightly increased. Sugar within normal limits, chlorides 720 mg. per cent. Lange's colloidal gold curve 0 0 0 0 0 0 0 0 0 0. A final lumbar puncture was performed on August 12th. The cerebro-spinal fluid was clear and colourless without coagulum. Eight cells—all lymphocytes—per c.mm. Total protein 0·035 mg. per cent. Globulin a faint trace. Sugar normal. Chlorides 690 mg. per cent.

It should be added that the Wassermann reaction in the blood was negative, Mantoux's test was negative, and that a skiagram of the skull exhibited no abnormality to suggest disease of the sinuses.

(*Continued from previous page.*)

relieve salivation. In these doses it is well tolerated. It does not produce anything like so complete a relief of all the symptoms as is effected by the alkaloids of the hyoscine group, but may be of some value as an adjuvant to these, in the treatment of parkinsonism.

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CARCINOMA OF THE CERVIX

WITH TWIN PREGNANCY AND NORMAL DELIVERY.

By J. L. Blonstein, M.R.C.S. Eng.

Cases of carcinoma of the cervix and pregnancy with delivery per vias naturales have been recorded. Usually these have been diagnosed before delivery, and if not terminated by Cæsarean hysterectomy, there has been severe post-partum hæmorrhage.

In 1913 H. B. Mylvaganam [1] reported a case of advanced carcinoma of the cervix uteri containing twins, treated by vaginal hysterectomy at the fifth month. In this case pregnancy was not diagnosed, the fœtuses only being discovered at operation. The indication for operation was the severe hæmorrhages. In 1918 B. P. Watson [2] reported a case of cancer of the cervix complicating triplet pregnancy, treated by Cæsarean Wertheim hysterectomy at the fifth month. Pregnancy was diagnosed, but from the second month hæmorrhages and foul vaginal discharge were present.

The following case appears to be unique.

I was called in by a midwife to Mrs. A., aged 38, a 2-para, on account of a prolonged first stage. The history of the pregnancy was uneventful except for a certain amount of low backache. There was no history of offensive discharge or bleeding. The last menstrual period had commenced on Sept. 23rd, 1930, had lasted five days, and labour had begun on April 27th, 1931. There had been a show, but the pains were slight and infrequent. On examination the abdomen was seen to be very pendulous. Twins were easily diagnosed. On vaginal examination the os was the size of half a crown. It was noticed that the cervix was hard and irregular in outline. No

[1] THE LANCET, 1913, ii., 930.
[2] Amer. Jour. Obst., 1918, lxxviii., 347.

ulcer was felt, and there was no bleeding on examination. In view of these findings and the absence of any history pointing to carcinoma, I took the condition of the cervix to be due to the scarring of lacerations at the first confinement. This would also explain the slow dilatation.

I gave a hypodermic injection of morphia gr. ¼, and hyoscine gr. 1/100. There was very little progress for 24 hours. At 1.30 A.M. on April 29th a live female child was born (vertex), followed by a live male child (breech) three hours later. There was no difficulty in delivery, and there were two independent placentæ. There was some brisk post-partum hæmorrhage, but this was easily controlled by injection of pituitrin 1 c.cm. The infants were premature and tongue-tied. The frænum linguæ was incised, and by the third day they were able to suckle. The mother developed a temperature of 101°F. and a pulse-rate of 116 on the third day. She also had herpes labialis. The next day the temperature was normal.

On the fifth day the male infant developed bullous impetigo (pemphigus neonatorum), and despite vigorous antiseptic treatment died on the eighth day. The female infant developed pemphigus on the sixth day and died on the ninth day. The mother, whose condition except for extreme lassitude was normal, got up on the tenth day. Her lochia had been normal. On the thirteenth day she took to her bed again. On the fourteenth day she developed pulmonary œdema, became comatose, and died. Post-mortem examination showed carcinoma of the cervix with glandular deposits.

The interesting points in this case are: (1) The absence of any symptoms of carcinoma during the pregnancy—e.g., hæmorrhages or blood-stained discharge. (2) The absence of severe post-partum hæmorrhage, a possible complication, which the textbooks stress as an indication for Cæsarean hysterectomy. (3) The viability of the infants. (4) The probable infection of the infants with pemphigus from the carcinomatous area.

NOTE ON THE SUBCUTANEOUS ADMINISTRATION OF VITAMIN D.

BY J. C. DRUMMOND, D.Sc. LOND., F.I.C.,
PROFESSOR OF BIOCHEMISTRY IN THE UNIVERSITY OF LONDON, AT UNIVERSITY COLLEGE.

THERE seems to be considerable uncertainty about the efficacy of preparations of vitamin D when administered parenterally. T. F. Zucker and M. J. Matzner [1] found the active principle of cod-liver oil to be of little or no value in the treatment of experimental rickets in rats when administered by injection. K. M. Soames,[2] however, observed some improvement following the intraperitoneal injection of cod-liver oil, although this method of administration was much less effective than the oral. Kramer, Kramer, Shelling, and Shear,[3] drew attention to the important question of the choice of medium for the administration and found that concentrates of vitamin D were more effective when injected subcutaneously in ethereal solution than when given in an oily form. A. F. Hess and M. Weinstock [4] tried the more practical method of injecting the active material in the form of a finely dispersed aqueous suspension and recorded cures.

In all these experiments rather large doses of the curative materials were given to the animals, and, apart from the general impression that the subcutaneous or intraperitoneal administration was less effective than oral, no very clear indication of the relative value of the treatments was yielded.

The results reported below were obtained during another inquiry* but in view of their possible practical importance it may be useful to present them as a separate note.

The preparations tested were colloidal solutions of irradiated ergosterol containing 0·1 mg. per 100 c.cm.† Litter groups of young rats were fed on the rachitogenic diet of Steenbock and Black for ten days, at the end of which time they were found on radiographic examination to be exhibiting well-marked rickets. Measured doses of the colloidal preparations of irradiated ergosterol were then administered to certain of the animals, others being kept as controls. The usual precautions were taken of distributing the rate of each litter amongst the groups. The subcutaneous administration was made by injection under the skin of the back, and care was taken to prevent loss from the site of injection so that the animal would not be able to obtain some of the material by licking. Administration lasted for ten days. The results are set out below and indicate that vitamin D administered subcutaneously is much less effective in curing rickets in the rat than when given by the mouth. Ten times the dose found to effect a rapid cure when given orally was of little or no value when given under the skin.

Group.	Number of rats.	Dose of irradiated ergosterol daily.	Method of administration.	Effect.
1	3	nil.	—	Severe rickets.
2	3	0·0001 mg.	Orally.	Complete cure.
3	3	0·0001 „	Subcut.	Bad rickets.
4	6	0·0005 „	„	„
5	4	0·001 „	„	„

Subcut. = Subcutaneously.

It is, of course, well known that fats and fat-like substances are absorbed very slowly from the subcutaneous tissues. M. Koehne and L. B. Mendel [5] have recently reviewed this subject and reported a number of their own observations, among which is a slow absorption of vitamin A administered subcutaneously in the form of butter oil or cod-liver oil. It might reasonably have been expected that vitamin D would have been much more rapidly absorbed from an aqueous colloidal suspension than from an injected oil. Whether this is so is not revealed by our experiments, but it is clear that the subcutaneous administration of vitamin D is of little or no value when compared with the oral.

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* Another aspect of this problem was being investigated in the Pharmacological Laboratories of the University of Cambridge by the late Prof. W. E. Dixon, F.R.S. It had been planned to publish the results of the two series of observations in a joint paper, but his untimely death renders this no longer possible. As far as his experiments had progressed, their results supported the conclusions reached in the present communication. I would like to pay tribute to the memory of a great teacher and a charming colleague.

† Similar results were obtained with solutions of irradiated ergosterol containing colloidal calcium soaps equivalent to 0·05 per cent. Ca. The solutions were prepared by The Crookes Laboratories.

MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AT a meeting of this society, held on Oct. 16th, Dr. C. KILLICK MILLARD, medical officer of health for Leicester, delivered his presidential address advocating the

Legalisation of Voluntary Euthanasia.

In spite of all the advances which preventive and curative medicine have made, and of all that modern science has achieved in the alleviation of human suffering, the fact remains, he said, that vast numbers of human beings are doomed to end their earthly existence by a lingering, painful, and often agonising form of death. He proposes therefore that individuals, who have attained to years of discretion, and who are suffering from an incurable and fatal disease which usually entails a slow and painful death, should be allowed by law—*if they so desire*, and if they have complied with the requisite conditions—to substitute for the slow and painful death a quick and painless one. There is, he contends, a fundamental distinction between legalised voluntary euthanasia and what is ordinarily understood by the term "suicide." It would be erroneous and unfair to describe legalised voluntary euthanasia as suicide, the latter being a term which carries with it, after centuries of condemnation, the stigma of a revolt against religion, law, and public opinion.

ETHICS OF SUICIDE.

Dr. Millard then considered briefly the attitude towards suicide of different ages, races, and religions. My own feeling, he went on to say, about the ethics of suicide is that it depends almost entirely upon the motive prompting the act. Excluding that large group of cases where the mind is unhinged and which should only call for pity, suicide is usually resorted to as an easy way out of difficulties, financial or otherwise. It then too often represents an act of moral cowardice, and as such it must of course, be condemned, especially so where the step is taken regardless of the pain and suffering which the act may cause to others. But there are cases where suicide is resorted to because a man believes, rightly or wrongly, that it will really be better for his loved ones if he is "out of the way." Such cases are to be deprecated because it is not for a man to decide for himself about such an irrevocable step, and he may so easily be mistaken. Pity, however, rather than censure should be the predominant sentiment in such cases. Legalised voluntary euthanasia would come into quite a different category as an act which was rational, courageous, and often highly altruistic.

A DRAFT BILL.

Some 60 years ago (in 1873) the Hon. Lionel Tollemache published an article in the *Fortnightly Review* entitled "A Cure for Incurables," in which he endorsed and supported an essay, pleading for the legalisation of euthanasia, published in the previous year by S. D. Williams, Junr. In this article Mr. Tollemache discussed the subject philosophically as a preliminary to reform in some later age. In order to bring the proposed reform more within the range of practical politics Dr. Millard has drafted a Bill to make voluntary euthanasia legal.

The Act to be called "The Voluntary Euthanasia (Legalisation) Act."

1. An application must be made by the person desiring to euthanise—i.e., to receive euthanasia—hereafter referred to as the applicant, stating that he has been informed by two medical practitioners that he is suffering from a fatal and incurable disease (as defined in the Act), and that the process of death is likely to be protracted and painful. That he desires to take advantage of the provisions of the Act; that his affairs are in order; that his near relatives (as defined in the Act) have been informed; and that he knows of no valid reason why he should not be granted the necessary licence or permit. This application must be duly attested by a magistrate or commissioner of oaths.

2. The application must be accompanied by two medical certificates, one from the ordinary medical attendant and one, the confirmatory certificate, from an independent medical practitioner, of a specified status, who must not be related to the applicant, nor be financially interested in his death.

3. The application, with the certificates, must then be sent to an official appointed for the purpose and referred to hereafter as the euthanasia referee. It would be the duty of the latter to examine the papers and see that they were all in order; to interview the applicant and the near relatives, and, if thought desirable, the medical practitioners who gave the certificates. The referee being satisfied will then give his certificate to the effect that the case appears to him to be a proper one to be granted a permit under the Act.

4. The application and certificates will then come before a court of summary jurisdiction, usually sitting in special session. The referee would be present to answer any questions, and representatives of the applicant and of the near relatives would also have the right of being present, if they so desired. The Court, having considered the application and heard objections, if any, would, if satisfied, issue the necessary permits—one to the applicant to receive euthanasia, and one to a medical practitioner, who would usually be named in the application, to administer the euthanasia. Only practitioners who had been licensed for the purpose would be eligible to act as euthanisors. Where the euthanasia referee held a medical qualification (which personally I regard as very necessary) he might well also act as the official euthanisor; but provided he held the necessary licence, the applicant's own medical attendant might often be preferred.

5. A euthanasia permit would remain valid for a certain specified time, say, three months, after which it would lapse, but could be renewed. This would mean that the applicant would be under no obligation to act upon the permit immediately. Often he would prefer to wait, holding the permit in reserve in case the pain should become intolerable. Sometimes, no doubt, a permit would never be used, the applicant's courage failing him, or death supervening sooner or more easily than he expected.

PROCEDURE FOR ADMINISTERING EUTHANASIA.

Assuming that the time has come when the applicant, having discussed the matter with those near and dear to him, and with his spiritual advisor, decides to act upon his permit, he will send word to the practitioner concerned and arrange date and other details. The procedure for administering euthanasia would be governed by regulations to be made by the Home Secretary or Minister of Health.

In the present state of our knowledge the usual method of choice, where the patient was able to swallow, would probably be a lethal (narcotic) draught, which might be given in a special utensil, the "lethal" cup. A prescribed procedure would have to be followed, which would include an express statement by the euthanisor as to the object of the draught, and a direct question to the applicant as to whether he was quite sure that he wished to anticipate death? If his answer was in the affirmative the lethal cup would be handed to him or placed within his reach. In cases where the patient was unable to swallow, the lethal dose could be administered hypodermically.

An independent and official witness would need to be present, and only persons of a certain status—e.g., magistrates, clergymen, solicitors, or doctors, would be eligible for this duty. Euthanasia having been accomplished, the euthanisor would fill up and sign

the necessary certificate on a prescribed form, and this would then be counter-signed by the official witness. This certificate, which would state the fatal disease from which the deceased had suffered, and would specify euthanasia as the mode of death, would take the place of the ordinary medical certificate for purposes of registration of death.

At first, no doubt, the number of persons who would take advantage of the Act would not be large, possibly very small. By degrees, however, as people became accustomed to the idea and prejudice broke down, and as public opinion came to regard euthanasia as a courageous, rational, and often very altruistic course, the numbers would increase.

OBJECTIONS MET.

Possible objections to the legalising of voluntary euthanasia may be classified as (1) ethical; (2) legal; (3) practical.

The ethical objection Dr. Millard meets by sheltering himself behind Canon Peter Green who, in his book entitled "The Problem of Right Living," published this year, refers to a man's inherent right to terminate his own life when suffering from incurable and painful diseases, and concludes:

> "I have found it impossible to discover any really conclusive argument against suicide under due restrictions."

As regards possible legal objections, there is the question of possible abuse—e.g., by friends anxious for selfish reasons to be rid of a troublesome patient. Subject however to the conditions and precautions indicated, it is difficult, he says, to see how the proposed arrangement could really be abused. Certain contingencies would need to be provided for—e.g., the matter of life insurance policies. A clause in the Act would deal with existing policies, allowing insurance societies to deduct a discount of, say, 5 per cent., for, say, three months, from the sum assured; but in policies taken out after the passing of the Act most societies would doubtless insert a clause agreeing to make no difference in the sum assured in case death was brought about by legalised euthanasia. For, after all, a permit could only be obtained where a man was suffering from a fatal disease. Moreover, even at present, suicide "whilst temporarily insane," the usual verdict, does not affect life assurance.

In practice the procedure to be gone through in order to obtain a permit might seem so complicated, and be so expensive, that no one would trouble to take advantage of the Act. Dr. Millard does not think that a man faced with the grim alternatives, assuming that he felt there was no moral or legal objection, would be so deterred. Even admitting that some obstacle would exist, that very fact would itself be some security against euthanasia being resorted to too readily. Expense would prevent very poor persons from taking advantage of the Act unless some voluntary fund were available. Wealthy philanthropists, who themselves took advantage of the Act, might bequeath substantial sums for this purpose as a mark of gratitude and sympathy. Opposition of friends would by degrees be overcome, and euthanasia come to be regarded as a reasonable and proper course. In many, perhaps in most cases, the motive actuating an applicant for euthanasia would not be merely to escape physical suffering for himself, but even more to shorten and relieve the physical and mental strain which a long drawn-out painful illness entails upon those nearest and dearest to him. Viewed from this standpoint, euthanasia would come to be regarded as an act of altruism.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF OBSTETRICS, MEDICINE, AND PSYCHIATRY.

ON Oct. 16th these sections met jointly, with Mr. BRIGHT BANISTER in the chair, to discuss the medical indications for

Premature Termination of Pregnancy.

Dr. L. S. T. BURRELL, speaking first on tuberculosis, said that one of the great problems of eugenics was whether or not a consumptive mother should have children. If the pulmonary disease in her had been completely arrested, there was no medical reason why she should not have a family; this was the safer to say because most people had at some part of their lives been infected with tuberculosis. But if the disease was merely quiescent, and so liable at any time to again become active, it was an open question whether she should have children. A child born of tuberculous parents was certainly handicapped; it was exposed to risk of infection, and was the victim of the drawbacks associated with a tuberculous household, one of them being the frequent absence from home of the diseased parents at a sanatorium, another the forbidding of such a child to visit some households. Still, the medical man could not advise abortion on account of danger to the child; he must concentrate his attention on the tuberculous mother. For this purpose, three stages of the disease must be considered.

In the *acute* or *steadily progressive* case, pregnancy should be terminated if the child was not viable. If it was viable, the possibility of inducing premature labour should be considered. Usually, pregnancy did not aggravate pulmonary tuberculosis, but parturition definitely did. If cases were seen before the fifth month of pregnancy, the process should be terminated, in this class of case, at once.

The second was the *fibro-caseous* type. Such a patient was holding her own, but as a result of undue strain was liable to setbacks. This was the stage of most patients who had left a sanatorium. Many consolidated this stage into cure, while others steadily went downhill; others, again, kept fairly well, with periods of relapse. For women in this unstable condition he advocated termination of the pregnancy if the patient was seen before the end of the fourth month; but if she was seen later, abortion tended to cause a flare-up in the tuberculous condition, almost as severely as did a normal labour. Thus it was reasonable to allow the pregnancy in such cases to proceed to term, or nearly to term.

In the *chronic fibroid* case the disease, though not completely arrested, was not spreading. Temperature and pulse were normal, and there were no toxic symptoms even when a fairly active life was led. In these women parturition did not usually cause an acute flare-up of the disease, and pregnancy could be safely allowed to take its course.

NON-TUBERCULOUS PULMONARY CONDITIONS.

In most non-tuberculous cases the only reason for ending pregnancy was heart failure—e.g., in chronic bronchitis and emphysema. In carcinoma of lung, actinomycosis, or other gross non-tuberculous conditions, a decision about the pregnancy must rest on the lines of ordinary medicine. Even in desperate cases of asthma it was very seldom necessary to interfere if the woman was well between attacks. Most asthma sufferers were free from symptoms

whilst bearing their child, and many asthmatic mothers had healthy children and were themselves improved by pregnancy and parturition.

HEART DISEASE.

Dr. T. F. COTTON said he thought there was general agreement among physicians and obstetricians that the chief cause of heart failure in pregnant women with heart disease was a mechanical one. Infections, as in heart disease apart from pregnancy, might be an important factor in cardiac breakdown. In all patients with structural heart disease the indications for treatment were based on forecasts of the course of the disease. In the congestive type the heart was unable to maintain the circulation, and the extra work thrust upon it by pregnancy was beyond its powers—even, in some cases, under sound treatment. If such a degree of heart failure could be anticipated, every effort should be made either to avoid pregnancy, or to terminate it in not later than the third month. This congestive failure was likely to develop during pregnancy when the heart was enlarged and the auricles were fibrillating. When there was congestive heart failure in the later months of pregnancy there was greater risk in interference than in allowing the woman to go to full term. The decision about this rested with the obstetrician. Of late years anxiety about the effect of an anæsthetic in heart disease had diminished. Pregnant women with chronic valvular disease commonly had active rheumatism, and this might lead to heart failure. If so, pregnancy should be terminated before the end of the third month if possible. Bronchitis and other intercurrent infections favoured heart failure symptoms, and so were an additional reason for interference. If there was no rheumatism, nor a history of a previous cardiac breakdown, the immediate prognosis for the pregnant woman was good. Still, the lives of such women would be shortened if they had repeated pregnancies, especially if home conditions did not allow of proper antenatal and maternal care. In the multiparous, therefore, previous heart trouble was a reason for early interference with labour, and so was increasing breathlessness of cardiac origin before pregnancy began. Recently there had been a justifiable tendency to allow more women with heart disease to go to term. He thought that the efficiency of antenatal clinics would be increased if they could be closely linked with the cardiac department of a hospital.

THE OBSTETRIC STANDPOINT.

Prof. BECKWITH WHITEHOUSE (Birmingham) said that the infrequency with which abortion was practised in hospitals showed how distasteful the operation was to most British obstetricians. On the major question of risk to life the indications were fairly clearly defined, but there was some division of opinion about the possible effect of pregnancy on the mother's subsequent health (physical or mental). He had recently tried to gain information from a number of British obstetricians as to the medical reasons for which they had done therapeutic abortion. The result showed that the standards varied considerably. On a five-year basis the total of induced abortions in eight London and provincial hospitals was only 267, or six per institution. In a return of 592 private and hospital patients the therapeutic abortions were 0·6 per cent. Still, he was convinced that abortion was being practised to-day on grounds not usually regarded as adequate; one of the reasons was rapidly repeated pregnancies. In cases brought to his notice the grounds for abortion included very recent pregnancy, general debility with loss of weight, previous operations on the abdomen, recent Cæsarean section, prolapse of the pelvic viscera, and previous operations on the pelvic floor for genital prolapse. In a number of cases in which he had declined to operate, he found that others had later induced the premature labour asked for. He had several times been asked by surgical colleagues to terminate pregnancy because of coexisting malignant disease, especially carcinoma of the breast. He had always agreed to do this, for he held that pregnancy stimulated the malignant cells. He considered that the ovary, through the corpus luteum, produced a tissue-growth factor. Coexisting disease of uterus or ovaries could rarely be regarded as an indication for terminating the pregnancy. Mental disease or nervous lesions gave rise to many difficulties, for they involved eugenic as well as therapeutic principles. In 22 cases of which he had particulars abortion was induced for epilepsy, or insanity, or puerperal mania, or suicidal tendencies, post-encephalitic conditions, or even bad mental family history. He himself had never performed abortion for epilepsy, puerperal mania, or supposed suicidal tendencies.

Mr. EARDLEY HOLLAND said that as encroachment on the cardiac reserve was always demonstrable in healthy pregnant women, it followed that pregnancy favoured decompensation in cardiac disease. The demands of the fœtus for glycogen were great, and a pregnant woman was liable easily to get into a state of glycogen starvation. The renal threshold for sugar was lowered during pregnancy, so that glycosuria was found at one time or another in a very large proportion of cases. These alterations in carbohydrate metabolism must have significance where diabetes mellitus complicated pregnancy, and this enabled one to understand the danger attending an association of the two states. On the pregnant woman there was a considerable drain for calcium so as to meet the demands of the growing fœtus and the later requirements of lactation. Recent work had indicated that an adequate supply of calcium might be of great importance in protecting a woman against pregnancy toxæmias. Many of the ductless glands underwent activation changes during pregnancy; increased thyroid activity was, no doubt, associated with the increased metabolism of the pregnant woman, whose basal metabolic rate during the later months was about 30 per cent. above normal. The pituitary gland might double in size during pregnancy, the enlargement being confined to the anterior lobe.

It seemed impossible, Mr. Holland said, to give a list of diseases in association with which a continuation of pregnancy was undesirable; one must rely on the general routine of experience. Apart from the toxæmias of pregnancy, the medical indications for induction did not arise at all often. In the later stages of pregnancy the principle was to treat the disease and neglect the pregnancy; this applied specially to pneumonia, because of the extra strain this induced. In his own series cardiac disease, chronic nephritis, and pulmonary tuberculosis accounted for 65 per cent. of the cases requiring abortion. What could be called the doubtful indications comprised a heterogeneous collection of combined medical, social, and personal states which defied classification. But there was a very wide gulf between illegal abortion and therapeutic abortion undertaken for doubtful indications.

THE MENTAL SIDE.

Dr. HENRY YELLOWLEES feared there was a tendency to overlook the psychiatric aspect of abortion; yet this was a medical aspect, and more really so than any others, since it included the patient as a whole, as a living organism in a certain environment, with all its involved relationships. Yet psychiatry could not supply a list of indications for terminating a pregnancy. Its traditional attitude, indeed, on this matter was very conservative. Psychiatry appeared to be only too ready not only to coöperate with general medicine and obstetrics, but to hand over the responsibility of the casting vote to these branches. In the correctness of its position, traditional psychiatry had become even more royalist than the King. In 1927 Dr. Watts Eden, speaking at Nottingham, declared, "I am prepared to defend the view that it may at times be right to terminate pregnancy even if the mother is not suffering from any condition which could be called a disease"—and by this last word probably was meant mental disorder too. Few traditional psychiatrists would go as far as that. Dr. Yellowlees agreed with Dr. Percy Smith that the psychiatric conditions in a case were always important, sometimes all-important. But no rule could be laid down for psychiatry; each factor must be considered by itself and in relation to the other factors. The late Dr. R. H. Cole had declared that the profession was without sufficient eugenic data to allow the possible future of the child to enter into calculations on the production or otherwise of abortion, but Dr. Yellowlees questioned whether this was always true.

Dr. G. W. B. JAMES submitted what he termed a mild criticism of traditional views. The first function of a psychiatrist called to see an expectant mother who was showing mental symptoms was to diagnose her disorder with precision. This was not always easy, but it was possible at once to decide whether the symptoms were those resulting from organic disease of the nervous system, or a confusion due to toxic causes, a psychosis, a neurosis, or a psychoneurosis. In the presence of the last two, interference with the pregnancy was seldom justifiable, though he would make an occasional exception in the presence of a severe anxiety state or an obsessional neurosis. Speaking generally, the attitude of the psychiatrist towards ending the pregnancy should be to preserve life, to alleviate or cure serious mental illness, and to prevent chronic mental ill-health. Whenever possible, the mother showing mental symptoms should at once be removed from home surroundings, and, for purposes of diagnosis and treatment, should be observed under hospital conditions. This, however, was mostly difficult for the poorer class of woman. He was firmly of opinion that maternity hospitals, and general hospitals with maternity wards, should have set apart a room with one or two beds to which pregnant women with mental symptoms could be admitted for observation. Surprisingly often mental symptoms yielded to early rest and care. The weekly interview in an out-patient department did not provide sufficiently accurate data, and little notice could be taken of the account of anxious relatives. Loss of weight and of sleep, and particularly of what he preferred to call "insight," were very important to watch. In the event of loss of all those three factors, the question of the termination of the pregnancy—or premature labour if the child was viable—must be seriously considered. It was possible to watch events so long that the psychotic condition was given an opportunity to establish itself. Psychiatry insisted on early treatment, but practice was not always in accord. Often the termination of the pregnancy cut short the precipitating cause of the mental upset. Early mental breakdown appeared to be commonest in women over 30 years of age who were then pregnant for the first time, in women pregnant for the third time, and in those who had had mental illness in previous pregnancies. Pregnancy should not be terminated for other than medical reasons, and of these one of the gravest was psychic disorder. Eugenic considerations should not weigh with the psychiatrist, and a bad family history alone could never justify abortion. In closing, Dr. James asked this question: "Do we approach these cases without some faint stirring of the old attitude to child-bearing which caused nearly the whole of the medical profession to oppose the use of anæsthetics in labour?"

Dr. CRIGHTON BRAMWELL (Manchester) said he had recently reported 82 consecutive cases of heart disease in pregnancy in which there were five deaths, and four of the five were patients who had congestive heart failure or auricular fibrillation. The other fatality was from pulmonary embolism. His view was that taking congestive heart failure and fibrillation as indications for terminating pregnancy, if one saw the case in the first three months after conception abortion should always be performed. If the case was not seen until later, the pregnancy should be allowed to proceed, and it was for the obstetrician to decide on the easiest method of accomplishing this. If Cæsarean section were chosen, sterilisation could be carried out at the same time. It was most important that the heart failure should be treated first.

Dr. W. A. POTTS (Birmingham) spoke of the hospital at West Bromwich where women with mental symptoms who were pregnant were transferred to the gynæcological ward for treatment, and maternity cases showing mental symptoms could be moved to the mental observation wards without certification. He associated himself with the views held by Dr. T. C. Graves and his staff at the Birmingham Mental Hospital—namely, that where there were mental symptoms, in those cases some focus of infection could be found. He suggested that the question of the termination of the pregnancy should be decided by the effect upon the mother not of the disease but of the treatment which might be carried out; what were the foci of infection, could they be dealt with, and, if so, what would be the effect on the mother? When a patient was obviously unhealthy and yet no focus of infection was disclosed to examination, it was well to resort to non-specific therapy, such as T.A.B. or other intestinal vaccines; in pregnancy it was of great value to use antiscarlatinal serum.

Dr. PERCY SMITH, at the Chairman's invitation, reiterated his views already quoted, adding that in respect of mental conditions one was always conscious of the law behind one. The willingness of the patient to go away for treatment must always be a factor.

Dr. B. DUNLOP thought that most ordinary people would smile at the attitude of the profession on this subject—namely, not to interfere except on purely medical grounds. He had been surprised at the way in which eugenic considerations had been belittled in the discussion. If the children were likely to be defective, those who refused to terminate the pregnancy could be held to ensure the birth of a considerable number of defective children.

Dr. LEONARD FINDLAY said that considerations relating to the child had come but little into the discussion—less than they deserved. If a child stayed with a phthisical mother, it was sure to be infected. Deaf-mutism, hæmophilia, and the myopathies should always be considered from the point of view of the progeny. Mentally deficient mothers were not usually very prolific, and it was very rare to see more than one mental defect in a family.

Dr. E. STOLKIND, speaking of infective foci, uttered a protest against wholesale tooth extraction, which seemed a panacea for so many ills. In the case of tubercle, it was almost impossible to say whether the disease was active or quiescent, and if quiescent, when it might again be active.

Prof. WHITEHOUSE and Dr. YELLOWLEES very briefly replied.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.

AT the inaugural meeting of the session, held on Oct. 15th at 11, Chandos-street, London, the incoming president, Dr. W. LANGDON BROWN, gave an address entitled

The Return to Æsculapius.

A striking feature of twentieth-century medicine is, he said, the return to the cult of Æsculapius—namely, cleanliness, fresh air, suggestion, dream analysis, and psychological explanation. The history of that cult is the history of therapeutics; organotherapy, for example, sprang from crude sympathetic magic, the savage warrior ate the heart of his foe to acquire his bravery and strength. Earlier Greek physicians had striven after a reasoned procedure, but they were influenced by a whole system of magical, or at least non-rational, pharmacy and medicine inherited from a remoter ancestry. While much of the temple ritual might now seem like quackery, he preferred to call it psychotherapy adapted to the need of the times. When ill-health weakens the control of the more recently acquired reason, and the more primitive emotions are allowed freer play, the same craving for magical cures is still seen to-day. The common phrase, "it worked like magic," expresses this deep if unconscious desire. The significance of the return to Æsculapius consists in the recognition of the importance, not only of the disease, but also of the patient who has the disease; the old adage, "examine the whole of your patient," thus assumes a new meaning. Future progress in medicine will come from a combined attack on the physical and on the psychological side. He referred to the great loss which medicine had sustained in the death of W. H. H. Rivers, whose biological training and shrewd insight into the mentality of the savage equipped him particularly well to lay the foundation of a sane psychotherapy.

Dr. Langdon Brown then passed on to consider in some detail the part played by the sympathetic nervous system in the bodily economy, indicating how it came about that the psychoneuroses may express themselves at any one of the three great levels of the nervous system—on the psychical level as obsessions, on the sensori-motor level as paralysis, contracture, tic, or anæsthesia, on the visceral level as various vegetative neuroses. To the practising physician the realistic psychology of Adler made, he said, an increasing appeal. The real struggle for existence is connected with that incessant urge, inherent in every living cell, to assert itself so far as external circumstances permit. In the psychoneurotically predisposed person frustration of this power motive favours retreat into phantasy. He illustrated some of these features by an analysis of the life and writings of D. H. Lawrence, whose great literary gifts he considered had been fatally crippled by his psychoneurosis.

Important as were the contributions made to medical science by materialistic medicine, it now remained for psychology to coöperate with, and so to enrich and complete, the work begun by its predecessors

PADDINGTON MEDICAL SOCIETY.

AT a meeting of this society on Oct. 13th, Dr. G. DE SWIETOCHOWSKI, the President, took the chair. A discussion on

Vertigo

was opened by Dr. WILFRED HARRIS. The sensory stimuli on which normal people depended could, he said, be dispensed with—as they were, for instance, in deaf mutes, who did not suffer from giddiness. He classified the causes of vertigo as aural, ocular, gastro-intestinal, circulatory, toxic, febrile, and cerebral—the last class including migraine and epilepsy. Height vertigo was allied to neurasthenic vertigo and was due to the suggestion of steep descent and falling. Any sudden cerebral lesion might cause vertigo, and toxins acted partly through the nervous system. Train sickness and giddiness from a swaying floor or from fear of loss of balance all acted by disturbance of afferent sensations. The most intense vertigo was due to disturbance of the vestibular nerve. The vestibular syndrome included nystagmus, vertigo, and vomiting, and sometimes facial palsy and nerve-deafness; this syndrome might be seen in the course of alcohol injections for trigeminal neuralgia if some of the alcohol overflowed into the eighth nerve. Slowly developing lesions caused milder giddiness, but sudden lesions of the cerebellum and its peduncles produced most intense vertigo, as in thrombosis of the posterior inferior cerebellar artery in arterio-sclerosis or syphilis. The fillet might be involved, causing crossed trunk and limb anæsthesia and facial anæsthesia on the same side. The nystagmus, conjugate deviation, and forced movements were on the side of the lesion. The patient might also suffer from hiccup, and severe pain in the analgesic face, and might have to learn to walk all over again when the lesion began to recover—usually after about two months. For weeks he would not be able even to sit up because of the vertigo. One patient had said that she seemed to be in the air, and the cars in the street to be in the air; another that the floor and ceiling were inverted, so that he feared to fall on to the ceiling, while the lamp hung from the floor. Naturally, the resulting vertigo was terrible.

AURAL VERTIGO.

Mr. M. E. VLASTO described the labyrinthine anatomy, and said that cases of vertigo came to the otologist either with obvious ear disease or because a physician had been unable to find a cause. A violent blow on the ear might cause vertigo, as would also a large plug of wax, a rise of blood pressure in the posterior cranial fossa transmitted by the lymphatic sac of the labyrinth, chronic labyrinthitis, and

hypersecretion of intralabyrinthine fluid due to vasomotor disturbances. A fall in intralabyrinthine pressure, as in low blood pressure, or traumatic liberation of the fluid in the labyrinth, embolism of the internal auditory artery or spasm, might produce vertigo. Other causes were pressure of a tumour or bony growth, toxic influences, and physiological causes like sea- and air-sickness. All these causes produced vertigo by interfering with the "harmonic" state of the two labyrinths. Examination must obviously be exhaustive. The history must begin by making sure that the vertigo was a true one; the essence of vertigo was displacement. Urine must be tested, blood pressure measured, and the ears carefully investigated. Deafness associated with vertigo suggested lesion of the labyrinth. Otoscopy revealed the condition of the meatus, drum, and Eustachian tubes. The function of the labyrinth should be determined, and evidence must be sought for any difference of tone between the muscles of the two sides of the body. The second group of tests was that producing artificial stimulation of the labyrinth. The most important associated symptom of vertigo was nystagmus—the slow deviation being towards the side of affected tonus. The labyrinthine component was the slow one; the quick return was central and not peripheral. In aural suppuration with early serous labyrinthitis the quick component of the nystagmus might for a brief period be towards the affected side. Romberg's test should be noted; the falling and deviation would be towards the side of the slow component of the nystagmus.

The treatment of vertigo was the treatment of the underlying cause. A common cause was malfunction of the Eustachian tube, and inflation or correction of nasal obstruction would clear it up. The cold caloric test showed whether or not the labyrinth was infected, and whether a radical mastoid operation would save the patient. For the "dead" suppurative labyrinth some otologists advocated opening and drainage; others preferred the radical mastoid procedure.

OCULAR VERTIGO.

Mr. F. A. JULER included in the term "vertigo" discomfort in the eyes such as to cause a feeling of giddiness or dizziness. Causes included defective vision; ocular palsies with diplopia and false localisation; muscular imbalance; and incorrect centring of glasses. The mere effort to overcome a blurred image might cause giddiness in conditions of general ill-health and fatigue. Remarkable relief might be given by a quarter of a dioptre cylinder, especially if the astigmatism were "against the rule." Ocular palsies might cause vertigo by double vision, false orientation of the second image, and the apparent movement of objects. It was worse when the patient had only one good eye, and was cured by closing the affected eye. In mild cases there might be no diplopia, but the blurring and confusion might cause giddiness. The diagnosis was often difficult; the causes of ocular palsy included infranuclear lesions due to tabes, disseminated sclerosis, and peripheral neurites, from chill, rheumatism, and diabetes; the nerves might be nipped by neoplasm, periostitis or hæmorrhage; the third nerve might be partly involved only at the base of the brain in, for instance, meningitic exudates.

Heterophoria might cause giddiness, especially if the patient was out of tone. In marked cases there was considerable discomfort, especially if the tendency to deviation were vertical. Prisms would give great relief. Careful tenotomy might well be considered, as prisms were heavy to wear.

Patients wearing unfamiliar or unsuitable spectacles often felt giddy. It was most important that the optical centres should be in the centre line of the patient's vision, especially for those with oblique astigmatism. Toric lenses would help. Fortunately, most eyes seemed able to overcome the difficulties by patience and perseverance. Some patients felt that the floor seen through their glasses was sloping, and this might make them giddy. They were usually astigmatics whose cylinders were not quite at the right angle.

DISCUSSION.

The PRESIDENT emphasised the magnitude of the problem involved in giving a quick diagnosis of and prescription for vertigo, and mentioned the psychological type of vertigo.

Dr. ALEXANDER BALDIE said that a general practitioner spent most of his time with three symptoms: headaches, rheumatic pain, and vertigo. Most of the vertigos were fleeting; the patient came for some obvious physical derangement, often remote from the vertigo. He asked whether physical fatigue and excessive function of eye, ear, and cortex might not produce giddiness. Numbers of cases had occurred during the war, apparently due to pure fatigue. Unconscious memories and associations might also play a part.

Dr. T. P. FYANS mentioned the vertigo of the menopause which seemed to have no cause other than disorder of glandular secretion.

Dr. SAUL CROWN said that the busy practitioner had to take any obvious cause that presented; adequate investigation was difficult in a short time. Many attacks did pass off in a few days under rhubarb, gentian, and bromide. In the arteriosclerotic group the vertigo was usually a sign of approaching cerebral trouble and treatment was difficult.

Dr. J. A. COHEN agreed that most of the patients complaining of "giddiness" were not suffering from vertigo in the sense that objects moved. He quoted two of his cases, in which objects had definitely moved; the first had been traced to pus in the right antrum after an otologist, an oculist, and a neurologist had reported that they could find nothing wrong; the second had lost the vertigo when constipation had been cured.

The PRESIDENT asked whether even a small amount of wax lying against the drum might not cause vertigo; it was known that a foreign body might. A certain psychological school regarded repressed sexual desires as a cause of intense vertigo.

Dr. HARRIS, in reply, said that "psychic" vertigo was one of the most abstruse forms both to diagnose and treat. He agreed that "unfitness" was a common cause. Cases of sudden falling, as in narcolepsy, might perhaps be due to vertigo. He quoted a case of Erb's juvenile muscular atrophy which had begun with vertigo. It would be a dreadful thing if vertigo never got well unless accurately diagnosed.

Mr. VLASTO, in reply, emphasised his limitation of the term "vertigo" to cases with displacement of the object or of the individual. The cases that got well with simple treatment were not true vertigo. Height "vertigo," menopausal and psychical giddiness were not true vertigo. A plug of wax would not cause it unless there were adhesive processes in the middle ear; wax caused "fullness," a swimming feeling, or a sinking feeling.

Mr. JULER also briefly replied.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this society on Oct. 1st Dr. DUNCAN FORBES, medical officer of health for the borough, delivered his presidential address on the

Acute Infectious Fevers.

As the years pass, he said, acute infectious disease affects our mortality returns less and less. In 1930 the zymotic diseases including all cases of diarrhœa claimed only 66 deaths in Brighton, against 224 in 1890 and 462 in the 'sixties. Typhus, once endemic, had gone with increased cleanliness of the people. We should never have another cholera epidemic in England, not because of improvement in our social conditions, but because our first care now is the bacteriological purity of the water-supply. The enteric fever rate was only 1/25th of what it was 50 years ago. The only serious danger remaining of large outbreaks was during the extension of the underground headings from wells, when chance typhoid carriers by defæcating in the headings might infect the water which was usually pumped unfiltered and unchlorinated direct into the mains. Summer diarrhœa had practically disappeared.

After this brief historical survey Dr. Forbes went on to speak of present-day infections and their control by preventive measures.

SMALL-POX.

Only 31 per cent. of children born in Brighton are now, he said, vaccinated in infancy and the fear of vaccination has been strengthened recently by the occurrence of sleepy sickness following primary vaccination, usually after some 11 or 12 days. Really its occurrence should encourage vaccination in infancy, as primary vaccination in the first six months of life is not followed by encephalitis, and protects against attack following vaccination in later life during scare periods. The chief danger is from the primary vaccination of school-children and adolescents, who should not be vaccinated unless they have been in actual contact with small-pox, when two marks with a minimum of trauma and of multiple scarring and cross-hatching, should be preferred. It is fortunate that whilst encephalitis lethargica is often followed by nervous disturbances, permanently invaliding the patient and rendering institutional treatment necessary, parkinsonism and permanent paralysis rarely follow post-vaccinal encephalitis, complete recovery being the rule. Histologically encephalitis lethargica and encephalitis post infection are different diseases. Why nervous symptoms should now follow vaccination is not known. Passage through rabbits does enhance the virulence of the lymph and it is suggested that this variation in procedure is a possible cause, but lymph so prepared had been in use for years before the appearance of nervous sequelæ.

Granting the occurrence of encephalitis following vaccination it is difficult to understand on what grounds the Ministry of Health allowed thorough vaccination for infants requiring four marks with a combined scar area of half a square inch to be abandoned by public vaccinators as infants under six months practically never suffer from encephalitis following vaccination, and when well vaccinated gain immunity for at least 10 years and a modified attack throughout life. Under the present method, vaccinated infants (only 40 per cent. are now vaccinated) have immunity from attack up to 5 years and a relatively slight modification in the severity of attack thereafter. Because of the absence of compulsory vaccination of all infants and by the reduction of the thoroughness of vaccination, I am convinced that our present system has ceased to be of appreciable value as a public health measure. Theoretically light vaccination in infancy followed by light vaccination at 8 and 16 is excellent, but without compulsion the later vaccinations will not be carried out on a sufficient scale to influence future epidemics. On these grounds I recently advised my council that the heavy cost of vaccination as at present carried out was not worth while, and that the system should be replaced by an offer of free vaccination and immunisation against diphtheria at convenient centres on an entirely voluntary basis.

During scare periods, vaccination in one insertion with a minimum of trauma is to be preferred, except perhaps for actual contacts, when two marks should be made in case one fails to take. Many more persons would submit to mild vaccination had they not seen or experienced the results of over-zealous vaccinators. With regard to the mild type of small-pox now endemic in England some advocate a relaxation of precautionary measures, as they hold that so mild a disease is not worth troubling about. The speaker believes that if there is no relaxation in our endeavour to control this disease it can be stamped out.

MEASLES.

Practically everyone, Dr. Forbes said, contracts this disease sooner or later. As measles is dangerous in the first few years of life it is best to delay the attack to the fifth year and to summer weather, but otherwise not to attempt to delay the spread of the disease as the sooner after 5 that healthy children get it over the better. I have known a mother to contract measles whilst nursing her children, adolescents laid up with measles just before important examinations, business men losing three weeks' work and suffering severely; all of whom regretted that they had not had measles when at school. Measles, after 5, should be regarded as a vaccination in the healthy child until a method of active immunisation is discovered or until attenuation of attack by the use of human serum is practicable on a large scale.

The Board of Education do not advise school closure as this, after the first crop of measles, does not prevent but only delays the spread of the epidemic. Schools should be closed only if closure can be used to delay the spread from the cold weather of January and February to the later spring months; for such a purpose closure should be kept in mind as a useful measure. Whilst objecting to school closure the Board advise the exclusion of contacts from infants' departments. This action leads to these young children playing in and about their homes with children under school age and to this extent is harmful. If the contacts were allowed to continue at school they could do no harm as all the non-immunes are in any case, and quite apart from contacts, infected within the next few weeks, in three or four successive crops according to the size of the department. The only advantage of the exclusion of contacts is that it gives the impression to the public that something is being done and is popular with the man in the street. I think it unfortunate that this attitude is encouraged by the Board of Education and at times by general practitioners who on seeing a case of measles, although without any knowledge of the progress of the epidemic, order all the other children to be kept away from school, thereby confusing our work.

Measles and whooping-cough constitute a great

danger even in well-conducted creches. Admission to these should be limited to children whose mothers have to go out to work. The nursery school is not so dangerous, as at the age of 3 the high mortalities have passed. In Brighton, judging by the last 26 years, diarrhœa is most dangerous in the first quarter of life, bronchitis in the first six months, and whooping-cough throughout the year. The infant seems to be more or less immune to measles in the first six months of life and the same holds in large measure for diphtheria (as shown by the Dick test), immunity being rapidly lost after the sixth month.

DIPHTHERIA.

If every infant were immunised with toxoid-antitoxin there need be no deaths from diphtheria, the disease which, considering the fall in the birth-rate and the smaller susceptible population, shows little fall in incidence and mortality. A number of homes for children in Brighton have been protected, and since that time, although an odd case of diphtheria has been reported, I have had no anxiety as to the child attacked or the spread of the disease. Apart from these residential schools and homes, although protection is offered to all children, only a few parents have taken advantage of the offer. The only question is whether general immunisation is an economically sound scheme which depends on the danger run by the individual child. So that the risk may be judged I have taken out the figures for Brighton (1474 cases and 122 deaths).

One out of every 13 children born contracts diphtheria before the age of 15.

One out of every 153 children born dies from diphtheria before the age of 15.

The corresponding figures for the 4-year-old are 17 and 218, 7-year-old 29 and 463, 10-year-old 65 and 1424.

Parents should be advised to have their infants protected as they may well happen to be the thirteenth and even the 153rd of the series; in fact it is well worth while protecting any child under 7 years of age. After 7 it should be ascertained if the child is Schick-positive before protection, as over half have acquired immunity by that age.

ISOLATION HOSPITALS.

These were established not for the treatment but for the isolation of infectious disease. The source of infection was believed to be the acute case. So far as control of the spread of disease goes—small-pox excepted—they have been a complete failure. It is now known that epidemic spread is due to carriers. For a mild disease such as scarlet fever it is doubtful if anything is gained by removal to hospital wards. Many of us believe that there the patient becomes saturated with not one but many streptococcal infections and is more apt to develop complications, and we know that from 3 to 5 per cent. of patients discharged from fever wards give rise to further cases. If the patient can be nursed in a room by himself at home, then he certainly should be nursed at home. I do not wish to indicate that the nursing in isolation hospitals is not good, but except each case of scarlet fever is nursed in a separate cubicle by highly trained nurses and cross-infection is avoided, scarlet fever is better nursed at home. Similarly with measles; when cases of this disease are nursed together in hospital, the mortality is appalling, and even the severe case would usually do better in a slum bedroom with the window open than herded with others in hospital wards. The fever hospital is necessary for particular cases which cannot be nursed at home, and is of the greatest value for special treatments. For instance,

(1) If a doctor is called to a child with sore-throat, and is in any doubt as to diphtheria, it is almost criminal for him to take a swab and await the result. What he should do is either to give a prophylactic dose of antitoxin, or to ask for the removal of the child to hospital.

(2) If the doctor attends a case of scarlet fever at home and the patient develops complications, such as acute mastoid, he should ask for its removal for operation. Some doctors, who do midwifery, refuse to visit scarlet fever patients. Of course, he should wear a gown when rubbing up against the patient, he should put the end of his stethoscope into disinfectant and carefully wash his hands at the end of the visit. The great danger is that he becomes a healthy carrier. He should therefore keep as far from the patient as possible, leave the room door open and be in the room for as short a time as possible. If these precautions are taken, the risk is infinitesimal.

(3) Cases of diphtheria, typhoid fever, puerperal fever, cerebro-spinal fever, and ophthalmia neonatorum are best treated in hospital as in all these special treatment is necessary. For instance, in toxic diphtheria, the intravenous injection of antitoxin and the administration of sugar and insulin, in puerperal fever glycerin treatment, in cerebro-spinal fever the intrathecal injection of antitoxin can usually be done satisfactorily only in hospital. There is no objection to the treatment of typhoid fever in general hospitals provided the nurses in attendance on the patient have been protected by T.A.B. vaccine. It is the general experience that resistance to attack is not reduced by any reasonable dose of vaccine, so that there is no risk in giving vaccine to nurses actually in attendance on cases of typhoid. All persons going abroad, even for a cruise in the Mediterranean, should be protected.

DISINFECTION.

With the knowledge that scarlet fever and diphtheria owe their spread chiefly to healthy or apparently healthy carriers, more and more doubt has been thrown on fomites as a cause of spread of infection. The 'nineties were the halcyon years of disinfection. After the removal of scarlet fever patients load after load of all sorts of bedding, clothing, and household goods were carted to the disinfecting station. When a return case occurred there was a hunt for the odd infected articles which had been brought out on the return of the patient from hospital. Because the overlooked case in scarlet fever, and the carrier in diphtheria seemed to explain fully the spread of these diseases, in 1910 disinfection after these diseases was replaced by the washing of sheets and pillow-slips and a spring clean of the room and for years Brighton was the only town adopting what was considered a hazardous course. Statistics, however, justified the change of procedure. Later, a test was carried out at Willesden on alternate cases, which went to prove that disinfection was valueless. Incidentally the replacement of disinfection by a spring-clean saves the town £400 each year, so that in the last 20 years £8000 has been saved to Brighton in this way.

CORRIGENDA.

LUXUS CONSUMPTION IN OBESITY.—In line 28, col. 1, p. 855, Oct. 17th, read *Hypothyroidism* was not a factor in obesity. Arguing from the observations of Eckstein and Grafe that the luxus consumption produced in the dog by overfeeding was abolished by the removal of the thyroid, Dr. Poulton went on to suggest that the luxus consumption in obesity is due to hyperthyroidism. His view is that hypothyroidism is not the cause of obesity, although it may follow secondarily after long-continued luxus consumption. Dr. Poulton is jointly responsible with Dr. Warner for the view that it is possible to deduce from the basal metabolism of an obese subject that there is a luxus consumption—i.e., that the body tissues are working harder and are producing more heat than in the ordinary individual.

VITALISM.—In the report of Prof. Fraser-Harris's remarks (p. 854), the keyword phrase should read: "Consciousness as cause of *neural* activity and necessary for a *neural* result."

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN EASTBOURNE.

SECTION OF DERMATOLOGY.

AT the second session Mr. A. DICKSON WRIGHT opened a discussion on

Varicose Ulcer.

He said should the veins become incompetent to return the blood to the heart, stagnation phenomena would result. The region in which ulcers developed varied according to the type of footwear. The name varicose ulcer was not comprehensive enough, because many of the ulcers had other causes, and as the final cause in all cases was gravity, a better name was "gravitational ulcer." In the treatment of all ulcers of the leg constant support was essential. In addition it must be such as not to involve hospitalisation, and it must not be too expensive; it must be simple and within the reach of all medical practitioners, and not too laborious and time-consuming. It was of the utmost importance that the treatment should not be left to out-patient or district nurses. The treatment the speaker adopted[1] was to support the leg with a bandage of elastic sticking-plaster, which could not move when once applied, and could be wound on smoothly in a continuous spiral. In large ulcers skin-grafts were buried in the granulations by insinuation of small implants, by darning in threads of skin, or by injecting suspension of skin in saline; but this made no difference to the method of dressing, the elastic sticking bandage being used just the same. Varicose veins were treated by injections of sodium morrhuate and ligature of large penetrating veins, and venous cysts were treated in some cases. These ligatures were performed in the out-patient department, as the whole treatment must be ambulatory. There were only two contra-indications—associated arterial disease and diabetes. Failure in the treatment was nearly always due to looseness of the bandage. Eczema developed in 5 per cent. of cases, and in about 1 per cent. became generalised. Blisters also developed under the bandage and caused a fair amount of pain and discharge. He never stopped treatment on this account, and had only once had to abandon treatment on account of eczema. Cutting of the bandage into the skin produced linear ulceration and was due to faulty bandaging. It could be avoided by placing longitudinal strips up the legs as splints. Pain was sometimes increased at first by the pressure; to avoid this the speaker said he used sorbo rubber pads, with adhesive on one side, and pressed into the floor of the ulcer. He had also found aspirin powder, sprinkled on the floor of the ulcer, a valuable analgesic whose effect lasted four to seven days.

Mr. Wright gave details of the successful treatment of two difficult cases, and subsequently showed a cinematograph film illustrating his methods of bandaging, skin-grafting, and injecting varicose veins.

Dr. J. H. TWISTON DAVIES said that between April, 1930, and June, 1931, he had treated 98 cases of gravitational ulcer by Mr. Wright's method. Of these, 68 were healed, 11 had been referred to their own doctors and were believed to be cured, 5 had been lost sight of, and 14 were still under treatment. Four of these last would not heal. He had always found that dermatitis could be cured by a second and tighter application of Elastoplast. He had found the same treatment successful for chronic eczema, and in Bazin's disease.

Dr. RUPERT HALLAM congratulated Mr. Wright on the remarkable success of his treatment. It was a common error to think that a large proportion of ulcers of the leg were syphilitic. Of 56 unselected cases of leg ulcers attending his out-patients only five had a positive Wassermann reaction, and antisyphilitic treatment did not improve the ulcers in any of these five cases.

Dr. J. T. INGRAM said he had found small multiple ulcers associated with varicose veins the most difficult to heal. Dr. H. C. SEMON suggested the use of silver foil between the ulcer and the bandage in cases which were slow to heal. Dr. J. O. SUMMERHAYES said that thin metal had been used in India for this purpose. He called attention to the fact that elastoplast bandages were now allowed for panel patients. Dr. H. D. HALDIN-DAVIS had found the occurrence of eczema the chief objection to the use of elastoplast bandages. Drs. R. SILCOCK, H. BROWN, G. B. DOWLING, and others asked questions about the details of his treatment, and Mr. WRIGHT briefly replied.

Thallium and Ringworm.

Dr. INGRAM read a paper on the treatment of ringworm of the scalp by thallium acetate. Thallium treatment, he said, was first introduced in 1927. Thallium was a heavy metal, and was very toxic, especially if given in repeated doses. Of the 24 cases of death following its use, which had been reported, four had received ten times the maximum dose. In 16 cases, which had occurred in an orphanage, there was gross overdosage. In four there was no overdosage but the method of administration was at fault, the thallium being given in repeated doses at 4, 5, and 7 days respectively. His own method was, to multiply the weight of the child in lbs. by four. This gave the dose in mg. After a dose up to 200 mg. the child was seen in the ordinary routine examination. Between 200 and 250 mg. the child was kept under observation, if possible, in bed. The dose was not repeated under three months. As epilation was never complete, the head was painted with 2 per cent. tincture of iodine t.d.s. and washed on alternate days. The results had been very satisfactory; of 101 cases thus treated 94 were entirely successful. In three cases only were there severe toxic symptoms.

Dr. SEMON said he had used the treatment since its introduction and had no cause to regret it. He completed epilation by hand at the fifteenth to sixteenth day under light anæsthesia, but he would now try Dr. Ingram's method of using 2 per cent. iodine.

Dr. HALDIN-DAVIS limited the use of thallium to those who were too young for X rays. His method was to multiply the weight of the child by 3·9, but he never gave more than 150 mg. He made a practice of checking the dispenser's calculations and measures to prevent errors.

Dr. TWISTON DAVIES endorsed everything Dr. Ingram had said. He had reported a case in 1928 of a child, aged 9 years, who was seriously ill for six weeks after a therapeutic dose, and who still had attacks of giddiness three months later. She had been seen recently and was perfectly well.

Salvarsan Compounds.

Dr. SEMON, in a paper on the Toxicology of Salvarsan Compounds, said that the arsenical content of salvarsan was still the generally accepted cause of toxic manifestations ensuing during or after its

[1] See THE LANCET, 1931, i., 457, 474.

administration. He personally had never seen a case of jaundice following the administration of arsenic. Further, if it was the arsenic in the salvarsan that damaged the liver, we ought to see an equivalent number of cases of neuritis, but he had never seen or heard of a case of foot-drop following an injection of salvarsan. He thought there was even less justification in thinking that arsenic was responsible for the dermatitis which follows the use of salvarsan. He admitted that the case of acute dermatitis after salvarsan is clinically indistinguishable from that due to inorganic arsenic, or from acute dermatitis due to any other cause. It was quite otherwise with the pigmentation which followed the prolonged administration of inorganic arsenic, and which was never seen after salvarsan. In support of these clinical contentions that arsenic is not the main cause of either cutaneous or hepatic complications after salvarsan, Dr. Semon gave an account of certain biochemical investigations by Drs. V. E. and N. L. Lloyd which point to the amino-benzene derivatives as being the cause of salvarsan jaundice. He further pointed out that a similar type of jaundice was seen among the T.N.T. workers during the war, and has also followed another benzene derivative, atophan. He concluded by saying that, in his opinion, the time had come for a revision of the 1922 report of the Salvarsan Committee of the Medical Research Council, which attributes the toxic manifestations of salvarsan to the arsenic, and which almost ignores, or omits to examine, the evidence for other possible or more probable causes.

REVIEWS AND NOTICES OF BOOKS

Selected Writings of John Hughlings Jackson.

Vol. I.: *On Epilepsy and Epileptiform Convulsions.* Edited by JAMES TAYLOR, M.D., F.R.C.P. London: Hodder and Stoughton. 1931. Pp. 500. 25*s*.

IT is 20 years since Hughlings Jackson died. Justly considered the founder of scientific neurology in England, his name has ever been one to conjure with among those who knew him in the flesh and who fell under his personal influence. Comparatively few honours came his way in life; his fame rested securely in the minds, as did affection for him in the hearts, of those who were fortunate enough to be of his time. Both at home and abroad the Jacksonian tradition is evident, and universal satisfaction must be felt by those who owe much to him that now at length a collection of the works on which his ultimate reputation must depend has appeared under the able editorship of Dr. James Taylor. While many of the papers chosen by the editor must be familiar to neurologists the world over, there are included others which have always been rather inaccessible, and it is gratifying to see these here reproduced. One who turns over these pages is brought into contact with a philosophic mind capable in a phenomenal degree of seeing beyond clinical data, minutely observed and recorded, to fundamental dynamic conceptions of neural and psychical function. Even to-day fresh light is seen to be thrown on familiar symptoms by the genius who could synthesise as well as analyse, and who sought tirelessly for causes and explanations concording with general scientific canons and principles in other fields than the purely neurological. It is surprising, perhaps, how little in the volume would in these days be considered obsolete if not actually mistaken, when the state of knowledge of Jacksonian times is borne in mind. Epilepsy is unchanged in its essentials—a remark not applicable to all nervous affections; and these Jacksonian contributions can be studied again with great benefit by twentieth century workers.

La défense de la santé publique pendant la guerre.

By Dr. LÉON BERNARD, Professor of Medicine, Paris. For the Carnegie Endowment for International Peace. London: Humphrey Milford, Oxford University Press. 1931. Pp. 336. 8*s*. 6*d*.

THIS new volume, in a series dealing with the economic and social history of the world war, is concerned with the problems of public health which arose in France and among French troops as the result of the hostilities, and with the measures adopted to meet them. A concise account, in Part I. of the book, of the general measures taken to protect the civil and military populations from the diseases which are apt to follow in the train of war, is followed by a detailed survey of the influence of hostilities upon the incidence, mortality, and control of the principal acute communicable diseases. In the third and last part, the social scourges—viz., tuberculosis, venereal disease, alcoholism, and maternal and infant mortality—are discussed at considerable length.

Prof. Bernard directs attention to the heavy incidence of the epidemic diseases in training camps, especially in the early years of the war, as contrasted with the armies at the front; to the steady, and in the case of diphtheria and epidemic meningitis, the rapid decline of incidence in training camps after the first year; and he concludes that sub-infections producing mass immunisation were the cause of this decline. He attributes the lesser extent to which measles shared in this movement to the absence of durable latent immunisation to this disease. As to mumps, there was actually a heavier incidence both in camps and at the front toward the end of the war. An interesting observation relates to the fatality of measles and scarlatina, which was much higher in hospitals and camps than in the field, a circumstance which the author attributes to the reduced opportunity for secondary infections at the front. As regards tuberculosis, venereal diseases, and child welfare, it is abundantly shown how the emergencies of the war promoted measures which had been tentative only in France before 1914, and how the country is now benefiting from the experience then acquired. The book is full of interesting charts and tables, and is well indexed.

Demonstrations of Physical Signs in Clinical Surgery.

Third edition. By HAMILTON BAILEY, F.R.C.S., Surgeon to the Royal Northern Hospital. Bristol: John Wright and Sons, Ltd. 1931. Pp. 227. 21*s*.

IN its new form some omissions from former editions of this book have been rectified, whilst the insistence on the names of originators of clinical signs has been dropped. The student passing over from medical school to hospital practice could not

have a better guide than this book. He will find not only simple, clear descriptions of the common clinical tests, but mostly also pictures showing just how they are carried out in practice. The illustrations are excellently reproduced. We have nothing but praise for this useful book.

Aids to Surgical Anatomy.

By RICHARD H. HUNTER, M.D., M.Ch., Ph.D., Lecturer in Anatomy at Queen's University, Belfast. London: Baillière, Tindall and Cox. 1931. Pp. 184. 3*s*. 6*d*.

THIS is an excellent little book. It is surprising how much Dr. Hunter has been able to put into such small space. In a future edition we would like to see the hypothetical Ludwig deprived of his "angle," which should be restored to Louis, and the relations of the spinal accessory to the jugular vein described less dogmatically. These, however, are trivial details from the surgical point of view. Students will find this book a real aid to revision.

A Text-book of Operative Dentistry.

By W. H. O. MCGEHEE, D.D.S., M.D., Professor of Operative Technology, New York University College of Dentistry. London: J. and A. Churchill. 1931. Pp. 932. 42*s*.

DEXTERITY in the conservative methods of dental surgery, unless controlled by the skill in differential diagnosis which is founded on knowledge of dental pathology, may lead to disastrous results. The two chapters on diagnosis at the beginning of this work on operative dentistry are therefore valuable, since all the routine methods of diagnosis, including radiograms, are fully discussed. The next chapter on oral prophylaxis includes not only the instructions to be given to the patient with regard to the care of the mouth, but also an account of remedial and prophylactic methods practised by the dentist, such as scaling and the extension of carious cavities in order to prevent recurrence of caries. An important section is concerned with technique. Teachers do not always appreciate the desirability of training the student from the beginning to use his tools in the correct way, so as to gain the maximum of mechanical efficiency. Many a dentist never learns to economise his energies, and accomplishes his work only by an extravagant expenditure of exhausting effort; while medical men who use dental instruments only on rare occasions are, as a rule, even more clumsy. This section is illustrated by an interesting series of pictures which show the right and wrong ways of holding various instruments. Particularly convincing are the photographs showing the correct and incorrect "stances" for the operator in different operations on the mouth.

The teaching on the important subject of cavity preparation in general follows the well-known work of G. V. Black. It is arguable that the standardisation of cavities has been pushed too far, and that the injudicious enthusiast may tend to destroy an unnecessary amount of sound tissue. The effort to produce sharp angles and rectangular cavities is no doubt sound in theory, but it may lead to an enlargement of the cavity to a degree seriously threatening the stability of the tooth. The impression left on the reader of this section of Mr. McGehee's book is that the tooth itself is less important than the filling. In a sense this is true, but it is possible to carry this conception too far. We have every sympathy with the author's desire to standardise technique for teaching purposes, but must point out that a rigid application of his principles by a conscientious but unimaginative operator might lead to considerable needless sacrifice of tooth substance. The guarded account of amalgam restoration, and the author's insistence on the necessity of careful attention to detail in the use of this material, will be generally appreciated. The section on the cast gold inlay is also very good. The revival of interest in the use of porcelain is demonstrated by the excellent account of the ways in which porcelain may be found useful. Yet in our view, however, it is doubtful whether porcelain inlays have now any real place in dentistry. The porcelain jacket crown, on the other hand, has an acknowledged value, limited only by the great skill required in its manipulation, and the time it takes to apply. It is in fact at present a luxury in dentistry. The description here given of the stages in its preparation is one of the best we have read. Even the novice who studies this section carefully should carry away a clear idea of the processes involved.

The book is lavishly illustrated with pictures of a high merit, and we commend it as a safe guide to the various operations of conservative dentistry.

The Alcohol Habit and its Treatment.

By WALTER E. MASTERS, M.D., M.R.C.S., D.P.H., of the Middle Temple, Barrister-at-Law; Medical Superintendent of the Hare Nursing Home, Chislehurst. London: H. K. Lewis and Co., Ltd. 1931. Pp. 190. 6*s*.

THIS volume deals clearly with the subject of alcoholism mainly from the standpoint of the voluntary nursing home; the advantages of such treatment over that of the compulsory inebriates' retreat is emphasised, and the need for additional voluntary institutions is pointed out. The nature of the habit and of its predisposing causes and motives is discussed, and the various clinical types of established alcoholism are described.

In the matter of treatment the author not only deals fully with the factors of physiological rest, diet, and drugs, but points out the possibilities, and indeed the necessity, for psychotherapeutic measures where the personality of the patient or his home environment make these desirable. In regard to prognosis it may be influenced by the recognition of adverse factors outside the physician's control, particularly in connexion with the patient's return, on discharge, to his former associations. This statement of institutional methods of treatment of alcoholism might serve as a model of something which is urgently required—a system of treatment for such patients on their discharge from institutional care, in which the private practitioner could coöperate.

Opticks.

By Sir ISAAC NEWTON. London: G. Bell and Sons, Ltd. 1931. Pp. 414. 6*s*.

IN a foreword to this reprint of the fourth, corrected, edition of Newton's "Opticks," Prof. Einstein says, "Fortunate Newton, happy childhood of science! He who has time and tranquillity can by reading this book live again the wonderful events which the great Newton experienced in his young days." Prof. E. T. Whittaker contributes an introduction, in which he recalls the fact that a hundred

years ago the world thought itself qualified to pass a final judgment on Newton's work in theoretical physics. His law of gravitation, regarded then and now as the greatest of all scientific discoveries, was held to be ultimate and unassailable, the typical law according to which all other laws must be fashioned. But, he notes, our grandfathers spoke of Newton's optical work with less enthusiasm; the brilliance of much of it was undisputed, but it was generally believed that Newton had compromised himself by favouring the corpuscular theory of light. Times have changed indeed. In 1915 Newton's law itself succumbed, and was superseded for theoretical purposes by Einstein's theory of general relativity. And, curiously enough, it has been Einstein's work on photo-electricity which has to a large extent reinstated Newton's corpuscular theory of light. For, as Prof. Whittaker points out, we have been forced to recognise that the wave-hypothesis and the corpuscular hypothesis are *both* true. This reprint will be welcomed by students of all ages.

The Diabetic Life.

Sixth edition. By R. D. LAWRENCE, M.D., M.R.C.P. Lond., Chemical Pathologist in Charge of Diabetic Clinic, and Lecturer in Chemical Pathology, King's College Hospital. London: J. and A. Churchill. 1931. Pp. 213. 8*s*. 6*d*.

THIS book, which has been translated into French, Spanish, and Dutch, has now reached a sixth edition within six years of its first issue. Few changes have been made, but the number of special recipes for dishes containing definite amounts of carbohydrate, protein, and fat has been increased. Dr. Lawrence now advocates the administration of saline intravenously to patients with diabetic coma. This has been recommended by other workers, and is a definite help in restoring patients who have been in coma for a long time. The introduction of a high carbohydrate and low fat ration is the latest development in the dietetic treatment, and seems to suit the majority of patients. Dr. Lawrence is not convinced that an increase in the carbohydrate value above 80 to 100 g. is of any advantage to the patient, and he still uses rather high fat values.

The book is of great value to the physician and for the exceptionally well-balanced and intelligent patient who will ignore the rather alarming details on the management of complications.

Recent Advances in Analytical Chemistry.

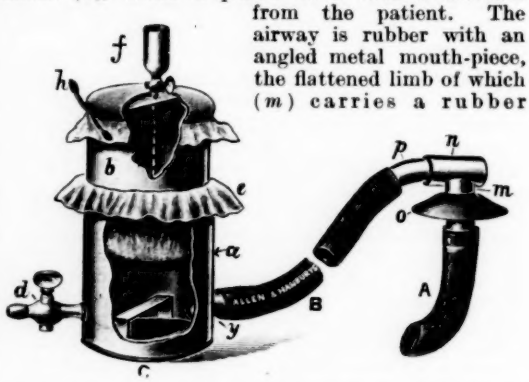
Vol. II. *Inorganic Chemistry*. Edited by C. AINSWORTH MITCHELL, M.A., D.Sc., F.I.C. London: J. and A. Churchill. 1931. Pp. 452. 12*s*. 6*d*

As in the first (organic) volume of this excellent book, each chapter has been written by an expert in the particular branch of analysis with which it deals; but whereas in the first volume the chapters corresponded to the various industries, in this second volume, with the exception of those on steel and on carbon products, they are assigned on a purely chemical basis, the elements being grouped together according to the similarity of their chemical behaviour. It is clearly impossible in a volume of this size to deal in detail with recent advances in the analysis of all the elements; thus some of the commoner elements have been omitted, presumably either because their determination is not of great practical interest or because little advance of importance has recently been made. The methods used for the commoner elements are not described in detail, but full references are given; on the other hand, the authoritative sections on the analyses of the rare elements and rare earth metals provide practical instruction which is valuable. Three of the chapters are not really concerned with inorganic analysis, but are of considerable interest to the biologist. These deal with microchemistry, with the measurement of pH, and with water and sewage analysis, and give a clear picture of the scope of the methods now generally used. Noteworthy features are a table of organic reagents for use in microchemical tests for inorganic ions, and a classified list of characteristic organisms arranged in order of their pollution intensity.

NEW INVENTIONS

AN ETHER INHALER.

THE apparatus here described and illustrated is designed to give an efficient ether anæsthetic in cases where it is essential for the anæsthetist to keep out of the surgeon's way. It consists of an airway (A) connected through a wide rubber tube (B) with the inhaler (C), which is placed at a suitable distance from the patient. The airway is rubber with an angled metal mouth-piece, the flattened limb of which (*m*) carries a rubber



obturator (*o*); this fits between the teeth and lips and ensures respiration through the airway. The round limb (*n*) (which is short enough to fit beneath a Schimmelbusch face-piece) takes the curved metal pipe (*p*) joined to the tube (B). This in turn is connected with the vent (*y*) of the inhaler. The inhaler itself is a pot (*a*) into which slips a cylinder (*b*) open at both ends. This carries with it into (*a*) one or two layers of lint (*e*) which act as a diaphragm upon which the ether drops. Its upper end is traversed by a metal bracket for the drip funnel (*f*). A spring clip (*h*) is supplied to the cylinder so that a layer of lint can, if necessary, be stretched across its upper end, thereby increasing the concentration of ether vapour in the cylinder. This is usually necessary in big patients. Breathing takes place through a vent (*y*) near the base of the pot (*a*). A tap (*d*) acts as a feed for ether vapour or oxygen. A nose clip is supplied to prevent nasal breathing. The patient breathes freely in and out of the whole apparatus. The volume of rebreathed vapour can be varied with the height of the cylinder in the pot. If breathing is too vigorous the cylinder must be pushed in and the lint on top removed.

The apparatus is made by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

Bedford. G. A. METCALFE, M.B., B.Chir. Camb.

THE LANCET.

LONDON: SATURDAY, OCTOBER 24, 1931.

HIPPOCRATES, HARVEY, AND US.

IN the Harveian Oration, with which this issue of THE LANCET opens, Dr. ROBERT HUTCHISON analyses the character of the great discoverer as it emerges from records which have been the subject of search and research ever since the foundation by the Royal College of Physicians of London of the annual Oration. He finds, as might have been anticipated, the prominent characteristics of HARVEY'S character to be love of truth, reverence for nature, the charity which interdicts envy and pride, the imagination which interprets quickly the significance of facts, and the quiet humour which enables a bold innovator, while rejecting the ridiculous side of concepts to which he is opposed, to do so without injurious contempt. So far Dr. HUTCHISON is following a line chalked out, and it has never been followed by an orator employing fitter words or apter quotation: but at the end of the Oration he takes, indeed, a line of his own. For he shows that much of modern therapeutics, which could not have materialized without HARVEY'S fundamental discovery, brings medicine to-day into touch with the humoral doctrines of Hippocrates.

Dr. HUTCHISON'S description of HARVEY'S message for us does not stress the connexion between the humoral doctrines and endocrinology in any detailed way, but his suggestion of that connexion is fascinating. When HIPPOCRATES based his principles and practice on the existence of a restorative principle which it was the duty of the clinician to discover and cherish, he was indicating an objective to which all medicine, as its study has become more and more scientific by the eradication of more and more superstition, has subscribed consistently and never with more uniformity than to-day. But when HIPPOCRATES was enunciating the humoral doctrines, necessarily without ability to distinguish between the various tissues of the body, he was recognising that all the phenomena of life depend on interaction, and that disease is the result of alterations in the properties of the permeating fluids, to which changes in the tissues are secondary. Here he was teaching our latest pathology. The detection, through biochemistry, of the changes in the fluids, in order that structural modification may be prevented, is the foundation of modern therapeutics, and it is a tribute to the genius of the old Greek school that we can see in the revolution of medicine, due to HARVEY, a development of the Hippocratic wisdom. "The circulation of the blood," says Dr. HUTCHISON, "is for the neo-Hippocratist, one of the chief modes by which the integration of the body is achieved, for through the medium of the blood every cell is able to influence every other, even the most remote. Integration is also maintained by the endocrine hormones carried by the blood, and to an even greater extent by the vegetative nervous system." Thus, HARVEY becomes the middle term between HIPPOCRATES and ourselves, and the growth of medicine is seen to be continuous throughout the ages.

Dr. HUTCHISON is full of wisdom, and nowhere in his Oration is this more obvious than in his remarks on the value of personality in science. Personality is important both in the attainment of truth and in the advocacy of truth, for "truth" he says "is perceived by the emotions as well as by the intellect, and the poet and discoverer are to some extent one." The need for imagination is always accepted for the poet, but very usually denied for the scientific worker. In the popular mind scientific truth is a matter of calculation, of mathematics and physics, of the balance and the calibrator. The implements of the worker are too often assumed to define and confine scientific research, while imagination is held to be a dangerous and therefore an inadmissible quality. Yet, in fact, the discovery of fundamental principles in science is always attended, during its evolution, by the display of the highest imaginative qualities; no sound generalisations can otherwise be made, and no laws can be established, without the faculty in the worker of prevision; and it is by generalisations that knowledge advances. But they must be founded upon the ascertainment of the special facts, when the lessons are grouped together for interpretation. Through his intensive inquiries the specialist is a pioneer in proportion as his contributions enter the stream of general progress, to advance, confirm, or modify the general laws. The true scientist is not a calculating boy, even though he may be immeasurably diligent and accurate in his calculations—this he must be; but those scientific workers, to whom the world owes debts that can never be paid, invariably have been endowed with vision beyond their individual interests. And never was this demand on their imagination more clear than it is in medicine to-day; as Dr. HUTCHISON briefly puts it, toilers in the field of medical science must see the necessity for unity.

THE FUNCTIONS OF VITAMIN A.

THE versatility of vitamin A is at first sight incredible. For pyorrhœa, puerperal sepsis, stone, respiratory diseases, xerophthalmia, hemeralopia, and degeneration in the spinal cord have all been referred in man or animals, in one way or another, to deficiency of this accessory food factor. Yet on closer inspection this heterogeneous collection of lesions mostly forms itself into a single group, as due to mucous membrane degeneration, leading to infection. And if, as was shown by S. B. WOLBACH and P. R. HOWE in 1925, deficiency of vitamin A results in keratinisation of the mucous membrane throughout the greater part of the body, then it is easily understood that the defences of these cells will be broken down and the entrance of pathogenic organisms will be facilitated. The

subject from this point of view we discussed a fortnight ago (p. 805).

Beyond lesions referable to deterioration of mucous membranes there remain hemeralopia, or night-blindness, and spinal cord degeneration. The relationship of vitamin A to the health of the eye was one of the earlier discoveries in the history of vitamins. Only the grosser lesions of the cornea were, however, at first recognised, and though a form of night-blindness was long believed to be of dietetic origin, its relationship to any specific vitamin deficiency has only recently been established. HIPPOCRATES recommended ox liver dipped in honey for a cure, tradition in Japan favoured bird's liver, and in Newfoundland cod's liver, or, better still, the liver of a gull or a puffin is the popular local remedy.[1] In actual fact any potent source of vitamin A, whether animal or vegetable, will effect a cure. L. S. FRIDERICIA and E. HOLM in 1925 correlated the condition with a failure to regenerate the visual purple in presence of a deficiency of vitamin A in rats, and K. TANSLEY [2] has worked this out still further, having devised a photographic method of measuring the visual purple. W. R. AYKROYD mentions several interesting cases in Newfoundland, in which night-blindness first came on after prolonged exposure to bright sunlight, the brilliant light promoting the more rapid exhaustion of the visual purple. There seems little doubt therefore that night-blindness appears when the organism is partly starved of vitamin A, and that it is caused by failure or delay in regeneration of the visual purple. We do not yet know what part the vitamin A plays in this connexion nor why this particular function should be damaged earlier than any other, but an interesting additional contribution to the subject has just been made by A. M. YUDKIN, M. KRISS, and A. H. SMITH,[3] who show that the retinal tissue of the normal eye of pigs is exceptionally rich in vitamin A, though the choroid tissue is not; the retinal tissue of animals fed on a diet deficient in vitamin A has not yet been examined.

With all this it comes as a surprise to find that vitamin A deficiency can play an important part in spinal cord degeneration. In the current issue of *Brain* Prof. E. MELLANBY brings up to date some striking observations—already outlined in a lecture he gave in America [4]—which have arisen out of his work on rickets in puppies. The rachitic animals, when on a diet rich in cereals, more especially wheat germ or rye germ, often developed great weakness, especially noticeable in the hind legs, together with spasticity. At first it was thought that these symptoms were part of the manifestation of rickets, particularly as the cod-liver oil which cured the rickets also cured or prevented the muscular weakness. However, it was soon noticed that muscular incoördination was also present, and histological examination of the spinal cord revealed degenerative changes in the form of demyelination of the nerve-fibres. Further experiment also showed that while the rickets was controlled by vitamin D, it was vitamin A—whether as cod-liver oil, butter, mammalian liver oil, cabbage, carrot, or carotene—which prevented the nerve degeneration or cured it, in so far as cure was possible. The development of the condition was however somewhat uncertain, and it was found that at least one important factor hindering nerve degeneration was a large reserve of vitamin A in the experimental animal's own liver. The cord degeneration, and to some extent the clinical symptoms, resembled the pathological conditions of the nervous system associated with human convulsive ergotism. Ergot was therefore added to the experimental diet of the puppies, and it was found that the lesions were much enhanced, but they were also equally inhibited by an abundant supply of vitamin A. Prof. MELLANBY points out that this observation is probably of immediate practical importance in treating convulsive ergotism in rye-eating countries. Ergotism usually appears epidemically in times of famine, and one may now assume that these are also times when vitamin A is very scarce, so that the neurotoxin in the ergot of rye is able to produce its ill-effect uncombated. He further suggests that his observations may also be significant in other diseases in which there is spinal cord degeneration. In pellagra, for instance, it may be that while the cutaneous lesions are due to a deficiency of vitamin B_2, the nervous lesions are due to a toxic element in maize or other cereals, which is ineffective in presence of vitamin A. It is thought that these results may also have some bearing on the production of the nervous lesions in lathyrism, tabes dorsalis, and pernicious anæmia. In the last there is some evidence (C. C. UNGLEY and M. M. SUZMAN [5]) that though the blood picture is cured by administration of liver extract, the nervous symptoms are not benefited until whole liver is administered. One point at least in which whole liver differs from liver extract is in its rich content of vitamin A.

The whole concept stimulates clinical investigation, and as far as the neurotoxin of ergot and cereals is concerned, and its neutralisation by vitamin A, there is a firm experimental basis. Till now the only vitamin held to play an important part in maintaining the health of the nerves has been vitamin B_1, and possibly also B_2; but we must certainly now be prepared to include vitamin A in this category also.

[1] Jour. of Hyg., 1930, xxx., 357.
[2] Jour. of Physiol., 1931, lxxi., 442.
[3] Amer. Jour. Physiol., 1931, xcvii., 611.
[4] Jour. Amer. Med. Assoc., 1931, xcvi., 325.

A NEW SERUM FOR PLAGUE.

WHILE laudable progress has been made in the prevention of plague, small success has been obtained hitherto with its specific treatment. Thus in India, where plague has been in evidence for the past 35 years and the field for an effective form of treatment is manifest, neither vaccines nor the bacteriophage nor such examples of plague anti-serum as have been available have been found to have any great effect in promoting recovery. Although it has not reduced the case-mortality by more than 7–10 per cent., serum appears to be the

[5] Brain, 1929, lii., 271.

most promising of these remedies, and accordingly a careful investigation has been carried out by Dr. B. P. B. NAIDU and Col. F. P. MACKIE at the Haffkine Institute, Bombay, during the past four years for the special and avowed object of obtaining a therapeutic serum of increased potency. The successive stages and results of this inquiry are described by them at p. 893 of our present issue, and are highly instructive.

It seems that in order to obtain successful curative serum for plague at least two requirements must be met. The first is to employ as antigen vaccines prepared from the most virulent strains available, and to see that this virulence is maintained throughout the process of vaccine manufacture. Emulsions made of plague-infected spleen are more virulent than cultures on artificial media on which *Bacillus pestis* is very apt to lose its virulence. The second requirement concerns the kind of animal employed for providing the serum. For reasons stated by them, NAIDU and MACKIE decided not to use the horse and to attempt the production of anti-plague serum from the more susceptible bovines and sheep. The degree of potency to which curative serum can attain was studied experimentally. First of all in rabbits, and by intense immunisation, a serum was prepared of such efficacy that with a comparatively small dose, given within 24 hours of infection, all the animals were saved, and even at a later stage a considerable proportion recovered under influence of the serum when the controls died. Sheep were next tried and here the process of immunisation was so severe that at the end of 16 months only 3 out of 21 survived. Nevertheless, the curative value of their serum was found to be two and a half times greater than that of the plague serum of the Pasteur Institute. In the third place, calves were used and a serum prepared that was found to have a curative value three times that of the Pasteur Institute serum. At this stage a comparison with anti-plague sera from a diversity of sources, further confirmed experimentally the superior curative potency of sera prepared at the Haffkine Institute. With regard to the presence of antibodies to *B. pestis* demonstrable in vitro, while the anti-plague serum prepared from horses at the Pasteur Institute and at the Lister Institute gave negative results, the serum prepared at the Haffkine Institute was found to possess both agglutinins and precipitins for local strains of the plague bacillus.

NAIDU and MACKIE were now in a position to attempt the specific treatment of human cases of plague, the serum available for this purpose having been prepared from 5 sheep, 3 bullocks, and 4 buffaloes. An outbreak at Hyderabad provided 76 cases, of which 33 did not receive serum, and of these 23 died. Of the remaining 43 who were treated with the serum 15 died. Comparison of individual cases in both groups when graded by the degree of septicæmia present when treatment began showed that when the blood had become heavily infected by the plague bacillus all of 8 control cases died, whereas out of 10 such cases treated with serum 3 recovered—a very remarkable achievement when all previous experience in India has shown that such cases have a mortality of 100 per cent. In view of these and further results described in their paper, and in view especially of the adequate manner in which their experiments were controlled throughout, it appears that the claim of NAIDU and MACKIE to have produced a more potent anti-plague serum than any that has hitherto been available is justified, and both these investigators and also the Haffkine Institute are to be congratulated on such an achievement. At the same time the number of human cases treated so far is admittedly small, and the position of such a serum can never be secure until the modus operandi is fully established, and a method of standardisation arrived at that will guarantee the potency of every batch and every sample.

MENTAL HYGIENE IN INDUSTRY.

THE need for physical hygiene in industry has become a commonplace, but wherever invalidity statistics become available the disturbing fact emerges that a serious amount of disability arises from causes psychological rather than physical. A brochure issued by the International Labour Office on "Mental Hygiene in Industry" gives a summary of observations, somewhat lessened in value by incomplete references, which indicates the extent and nature of these disabilities. Defects of mental adaptation show themselves in industrial unrest, in frankly psychoneurotic illness—to which the old name of neurasthenia is still applied by one of the authors quoted—or in bodily conditions such as the occupational neuroses or in circulatory, digestive, and somatic reactions associated with hysteria. This catalogue of troubles is startling; recommendations for coping with them include the psychophysiological selection of workers, the examination of the mental state of workers who have been the victims of accidents or shocks or have acquired mental defects at work, as well as coöperation with psychiatric clinics, presumably for purposes of treatment. These requirements demand a general knowledge of the subject that our present curriculum makes no claim to provide, and justify the provision of post-graduate instruction in the course of lectures on medical industrial psychology at the London School of Hygiene and Tropical Medicine. The psychoneuroses have too long been regarded as imaginary maladies, as luxuries of the idle and self-indulgent. The recognition that industrial efficiency depends upon their prophylaxis and treatment is only one among many reasons for giving the subject the attention that it needs.

AT a meeting of the Royal College of Physicians of Edinburgh on Oct. 14th, it was resolved that in view of the national situation, the ceremonies in connexion with the celebration of the 250th anniversary of the foundation of the College be postponed to some future date.

Sir Edward Marriott Cooke, who died in London on Oct. 17th in his eightieth year, was associated all his life with the care of mental disease. He was chairman of the Board of Control from 1916 18, when many of the public mental hospitals were converted into hospitals for sick and wounded troops. For the last ten years of his life he had acted as unpaid Commissioner under the Mental Deficiency Act.

ANNOTATIONS

UNITY IN MEDICINE.

In his presidential address to the Pathological Society of Manchester on Oct. 14th, Prof. W. Fletcher Shaw reminded his hearers of the astonishing fact that until 1886 licences could be obtained to practise medicine, surgery, and midwifery separately. The Act of 1886 then insisted that no one could reach the Medical Register without having been trained and examined in all three subjects. Curiously enough the chief factor in bringing this about was the stress laid on the importance of a general training in science and then in all branches of medicine, not by the official colleges but by private medical schools. Of these the most famous was that of William Hunter in London; its popularity and that of similar schools compelled the hospitals to found schools of their own at the end of the eighteenth century. Turner's school in Manchester was the first to be founded outside London; it was founded in 1824, and it still exists as the parent of Owens College and the grandparent of the medical faculty of the Manchester University. Fusion having been accomplished, it might have been expected that the branches of medicine would remain fused. Unfortunately, said Prof. Shaw, this is not so; all these subjects are included in the qualifying curriculum, but during the period of fusion other forces diverted the student's post-graduate work of these into separate and distinct channels. These forces were the rapid advance in knowledge, and the formation of special hospitals. These hospitals did little harm at first, as their staffs treated all the types of illness met with in private practice; but gradually there arose groups, interested only in special branches, who spent the whole of their post-graduate lives in the practice of that branch. This was, he said, bad for patients and bad for teaching, as each teacher tended to look at a subject from his own particular angle, without reference to any other. And the specialisation extended even to the basic subjects—anatomy, physiology, and pathology—which in many schools were taught without relation to each other or to clinical subjects.

Prof. Shaw went on to speak of how these evils might be remedied in the future by giving more attention to the teaching of the basic subjects, students being encouraged to take an honours degree in physiology after passing their ordinary second examination. Teachers of these subjects should be chosen as much for their ability to impart knowledge as to carry out research; they should themselves have had clinical post-graduate training, and throughout their teaching career they should keep in touch with clinical work. No more special hospitals should be founded; only special departments of general hospitals. Many special hospitals, he said, were doing excellent work and should not be scrapped. When, however, rebuilding had to be carried out, it should be as part of a scheme whereby they were grouped together, each retaining its own name, funds, and governing board, but with complete freedom of medical service, so that members of one staff could be called in consultation with the others, and patients freely transferred within the group.

England, Scotland, and Ireland possessed their separate Royal Colleges of Physicians and Surgeons, and now there was a College of Obstetricians for the whole country, each with its own special regulations and tests. Candidates for hospital staff appointments in different centres reach their goal by different means: in some stress is laid upon post-graduate clinical experience, in others upon special qualifications; but no hospital or college, said Prof. Shaw, requires its candidates to produce evidence of post-graduate training in medicine as a whole. By combination these colleges could insist upon a broad general training in medicine for all candidates for consultant rank. An examination after the pattern of the primary F.R.C.S., or an honours degree in physiology, would guarantee special training in the basic subjects. After qualification, a period of one or one and a half years of resident work, equally divided between the three main branches, followed by a clinical examination ranging over the whole subject of medicine, would ensure a broad general training. Then each candidate might be free to fulfil the special requirements of the particular college he wished to enter. Thus, said Prof. Shaw, the teaching of clinical medicine would rest upon a broader foundation—at present a vague dream, but one which he hoped some day might come true.

CANCER STUDIES IN NORWAY.

Two papers in *Norsk Magasin for Laegevidenskaben* for June are based on the valuable material collected by the Norwegian Cancer Committee which has been at work since 1907. The first of these papers, by Dr. G. H. M. Waaler, is a brave attempt at finding out what part, if any, heredity plays in the genesis of cancer. Since 1908, some 6000 cancer notifications have been made to the cancer committee. These notifications represent the "primary cases." The "secondary cases" are represented by the deaths from cancer in the families of the primary cases. Many investigations of secondary cases were made at the time of notification of the corresponding primary cases; and in the case of about 2000 families a second investigation was made in 1929 with regard to the incidence of cancer in the families of primary cases noted several years earlier. After publishing numerous tables and commentaries thereon, Dr. Waaler comes to the conclusion that there may be two hereditary factors which, independently of each other, predispose to cancer. He puts at about 16 per cent. the frequency with which each of these factors comes into play. One of them, he finds, plays an equally important rôle among men and women, while the other, connected with the sex element, predisposes more to cancer in the woman than in the man. Cancer may not infrequently occur among men in whom neither of these factors is present, but this is much less frequently the case among women. Dr. Waaler admits that most of the observations on which he bases his belief in the influence of heredity might be cited in favour of the influence of environment. But the observation which is most in support of the hereditary factor, as opposed to the environmental, is the greater incidence of cancer among blood relations than among married persons; while members of the same family usually scatter after they have reached the age of 20, it is precisely after this age and for the rest of their lives that married persons live in the same environment.

In the second paper, Dr. F. G. Gade, secretary to the cancer committee, draws attention to the similarity of the behaviour of cancer in the different reproductive organs of the woman, as shown by the returns in Norway for the 10-year period 1919–1928. In the age-group 50–59, the deaths from cancer of the

ovary accounted for 27·8 per cent. of all the deaths from cancer of this organ. The corresponding figure for cancer of the uterus was 26·3 per cent., and for cancer of the breast, 27 per cent. There was thus at the age between 50 and 60 a death-rate from cancer in these organs which was much higher than the corresponding death-rates in any other decade in life. But when the deaths from cancer of the stomach in women were investigated, it was found that the peak was not reached till the decade 70–80, in which decade 31·4 per cent. of all the deaths from cancer of the stomach in women occurred. Dr. Gade finds similar observations in the posthumous work of Clemens v. Pirquet (Allergie des Lebenalters. Die bösartigen Geschwülste) published in 1930 and based on the cancer death-rates of England and Wales in the period 1911–1926. Dr. Gade is inclined to support the theory according to which the lower incidence of cancer of the stomach in women, as compared with men, is due to so many cancer-predisposed women having been killed by cancer of their reproductive organs before the disease had had time to develop in the stomach. He sees in the high cancer-rate in the reproductive organs of the woman after the climacterium a biological law, senile changes in these organs promoting cancer therein, just as senile changes in general seem to favour the development of cancer in other parts of the body.

THE PRESCRIBER.

WITH the October number the *Prescriber* completes its little jubilee. From a modest origin 25 years ago as an "aid to prescribing," with an issue of 1000 copies, it has grown to maturity as a journal of cosmopolitan outlook and catholicity of content. We offer our congratulation to Dr. Thomas Stephenson, who has been its creator, pilot, and inspiration. Originality has been throughout the keynote of the journal and it has provided contact for the practitioner, specialist, and bench-worker with the literature of drugs and their actions. Original articles and summaries prepared by qualified abstractors have been grouped month by month to form a compact review of modern teaching and practice. The busy practitioner has had good reason to appreciate the monographs dealing with recent advances in endocrine and spa treatment, as well as the systematic accounts of therapeutic progress, always combined with judicious criticism of newer remedies. The teacher has not had to look in vain for a survey of contemporary work, or for a reference to the original sources of information. The journal has never lacked charm and distinction. Observations and opinions have been set out with a judicial authority and without the premature praise or hasty condemnation which have blighted the career of so many remedies and methods. We wish our contemporary a continued popularity and prosperity.

GAS AND OXYGEN ANÆSTHESIA.

SOME interesting questions are raised and to some extent answered in Dr. Macklin's paper on gas and oxygen anæsthesia which we publish at p. 897. The questions affect both theory and practice. As regards the latter, no anæsthetist to-day, we imagine, disputes the proposition that whenever an operation can be perfectly carried out with no other anæsthetic than gas and oxygen, the gain for the patient is great. The trouble is that those very patients for whom it is most desirable to avoid all inconvenient after-effects, on respiratory or gastro-intestinal systems, are the very patients for whom gas and oxygen alone is not effective enough. We allude, of course, to patients undergoing operations on the upper abdomen. In these people Dr. Macklin claims good results in only a third of the cases and obviously that is not enough. An anæsthetist must be sure of a much higher proportion of good results for any method which he recommends. The important practical question is how to make gas and oxygen, without ether or chloroform, perfectly effective for upper abdominal operations. The best answer we believe is barely considered by Dr. Macklin. It is to be found in the much more frequent use of local injections for the production of relaxation. The surgeon who desires the best possible condition of his patient after operation will expect of the anæsthetist a perfectly quiet induction of unconsciousness and a maintenance of that state without deleterious effect on the patient. For perfect relaxation he will aid and abet the anæsthetist by local means. In no other way can the complete exclusion of chloroform and of ether be secured. Endotracheal use of gas and oxygen, and the proper employment of basal narcotics, can help, but they cannot of themselves always ensure perfect relaxation of the upper abdomen with no other anæsthetic than gas and oxygen. Allied with skilled use of local infiltration however they can certainly do so. Dr. Macklin believes that to render gas and oxygen effective by employing secondary saturation is no less safe than to achieve the same object by addition of ether or chloroform. Theoretically he makes out a good case, particularly from the point of view of the patient's condition after operation. Neither method, however, appears to equal either in effectiveness or harmlessness the conjunction of basal narcotics, gas and oxygen and local analgesics.

SIZE OF THE HEART IN CHILDREN.

Dr. A. F. Hecht, of the University Children's Clinic in Vienna, has carried out an extensive investigation [1] of the size of the heart in children in the hospital or attending a special out-patient department for heart affections. The children ranged in age from 6 to 14 years and in addition to having an orthodiagram made of the heart, each child was carefully measured as regards body-weight and height, sitting height, and breadth of thorax. Dr. Hecht used the Amsler planimeter to measure the actual superficial area of the heart shadow, a measurement found by Dr. Bedford and Wing-Commander Treadgold in our last issue (p. 838) to be less valuable than the transverse diameter, although they admitted that in the hands of a single observer the experimental error might be no greater. This area, stated in square centimetres, was used as the numerator of a "surface-quotient" of which the divisor was the weight in kilogrammes reduced to the two-thirds power. Expressed as a formula this means that

$$\text{Surface quotient} = \frac{\text{Area}}{\text{Weight}^{\frac{2}{3}}}$$

In order to avoid unnecessary decimals the result is multiplied by 100. Based upon nearly 400 observations a normal group is first described by Dr. Hecht. He divides this group into three: (1) perfectly normal cases; (2) those with a systolic murmur without any history of rheumatism or any evidence of heart disease; and (3) those with slight functional derangement of the circulatory system without obvious pathological lesions in the heart. In these three divisions the surface-quotient was 737, 761, and 781

[1] Jahr. f. Kinderh., 1931, cxxxiii., 26.

respectively, giving an average value of about 750. Particularly heavy children gave an abnormally small quotient (16 cases under 600) and thin children tended to give an abnormally high quotient. Among children with a definite rheumatic history, but without obvious heart affection, the average surface-quotient was below the normal, lying about 725, and among cases of chorea without heart involvement the average quotient was approximately normal, although no case out of 10 examined was quite normal, the values ranging from 670 to 940. In cases with definite heart disease the values found for the surface-quotient revealed many points of interest. For example, in patients with definite mitral disease (nearly 200 cases) the average quotient for boys was 890 and for girls 800. Failure of compensation raised the figure in one instance to 1980 while in the absence of any rheumatic recurrence the surface-quotient may be observed to decrease as in one instance where it fell from 1320 to 720—a favourable factor in the prognosis. In cases of failure with gross congestion of the liver the values lay between 1000 and 2000 while in one patient with auricular fibrillation the quotient was found to be 1910. In over 40 patients with both mitral and aortic lesions the average surface-quotient was 940 while over 60 examples of congenital heart affection gave an average value of 850. Repeated observations on this latter group indicated that in certain cases the quotient appeared to become smaller as the child grew so that the usually found parallelism between the surface area of the heart and the two-thirds power of the weight was absent. Another interesting group of patients examined was that in which children who had suffered from some infectious disorder, such as diphtheria, scarlet fever, or influenza were observed. A slightly raised average surface-quotient was found for these cases (780), and in one instance, where the figures rose from 715 to 845 while under observation, the recording of the surface-quotient served as a useful warning that the child's heart had been more damaged by the infection than had been obvious to other methods of examination. Dr. Hecht gives full details in his paper of children suffering from many other disorders in addition to the examples here quoted. He says that it is not yet possible to assert that an abnormal value for the surface-quotient necessarily means a pathological lesion of the heart. Nevertheless his observations suggest a useful line of inquiry.

CHRONIC ULCER OF THE LEG

A NEW method of treating chronic ulcer of the leg is reported by I. S. Tunic and D. H. Kling,[1] who claim successful results in 88 per cent. of a series of 25 cases. Very briefly, it is based on the belief that all such ulcers are surrounded by a ring of fibrotic tissue. To break down this circulatory barrier and stimulate the formation of fresh blood-vessels and healthy granulation tissue, injections of 2 to 10 c.cm. of normal saline solution are forced from a Luer-Lock syringe into the edge of the ulcer every three or four days, until it becomes more vascular and begins to heal. A previous disinfection is advised if much sepsis is present, and the edges of the ulcer are painted with weak tincture of iodine before inserting the needle. Because of the force sometimes required to ensure the solution reaching the correct plane, some pain may be experienced, but it can be readily controlled with 2 per cent. novocain previously instilled. During treatment only bland ointment or sterile vaseline dressings are permissible. The method is said to be exceedingly helpful in the treatment of the chronic "chemical ulcers" resulting from leakage during the injection of varicose veins. If this is so, it may well prove a boon to sufferers from this accident, for such ulcers may take months to heal and are exceedingly painful. It is somewhat surprising that Tunic and Kling make no mention of the results obtained with the pressure bandages advocated by Dickson Wright in all varieties of leg ulcer, and now in use in most out-patient departments in London. The success of this treatment was evident in the discussion reported at p. 913.

[1] Amer. Jour. Surg., Sept. 1931, p. 524.

ON SENDING PATIENTS TO DAVOS.

THE Queen Alexandra Sanatorium Fund helps tuberculous patients of small means to obtain treatment in Switzerland. It is not available for any other purpose, and although the flight from the pound has its drawbacks, the Fund is carrying on as usual. The grants being paid in Swiss francs, the assisted patients get the same amount of help as they did, although no doubt their stay in Davos will cost them more this winter. Applications so far have been up to normal, although there have been one or two withdrawals on financial grounds. The decision to revert as far as possible to the one-house system will make things simpler for the Fund and those whom it helps. It may be recalled that when the Queen Alexandra Sanatorium was sold in 1922 and the proceeds devoted to grants in aid, arrangements were made to secure the Hotel Frei where each patient was given free medical treatment and nursing and a contribution towards the cost of board and lodging. This seemed to the officers of the Fund to provide the nearest possible approach to having a sanatorium of their own. The scheme was reluctantly abandoned when post-war prosperity in Davos made such terms unacceptable to the hotel, and from 1925 patients were given a choice of approved establishments with a block grant of two pounds a week towards expenses. Although the system proved popular, the loss of unified supervision and control was serious. It has now been found possible to renew the arrangement with the Hotel Frei where assisted patients are required to stay, with liberty to choose their own rooms. Last winter 42 patients were assisted to remain at Davos for an average stay of 150 days, the average grant being £43 per patient. Application should be made to the hon. secretary, Mr. A. Stanley Herbert, 25, Birchin-lane, London, E.C.3.

THE MEDELLIN ACCIDENT.

PROPHYLACTIC immunisation against diphtheria with toxoid, either alone, or with antitoxin in the form of toxoid-antitoxin mixture or floccules, is now an established part of the campaign against diphtheria. In the past a severe check has occurred each time a disastrous mistake was made by those responsible for the making of prophylactic. In 1930 an accident at Medellin in the State of Colombia, South America, was reported by cable in the daily press. Public health officials will be glad to have full details in a thesis by Dr. B. Ramirez, issued by the University Press of Antioquia (Colombia). In the previous three years an epidemic of severe diphtheria existed, for 30 per cent. of 485 notified patients died. Toxoid ("anatoxine") made in Medellin was injected at Las Salas Cunas into a group of children, who were Schick-positive; 0·5 c.cm. was given, followed by 1 c.cm. three weeks later, without special incident.

The third injection of 1·5 c.cm. was in error taken from a bottle of toxin; 16 of the 48 children died—three within 24 hours, 11 within 60 hours—of acute diphtheritic toxæmia, one eight days later, and another six weeks later of post-diphtheritic paralysis. The parents of the children during the night following the injection of the toxin were alarmed by extreme restlessness, convulsions, fever, diarrhœa, vomiting, and severe pain at the site of injection; the doctors next day noted dyspnœa and, in many, uncountable or imperceptible pulse. Antitoxin was given intramuscularly as soon as it was available, but in the confusion many of the children did not receive any until a number of the victims were dead; it is improbable therefore that serum can be credited with the recoveries. Almost the whole of the 48 children were ill temporarily; fever and convulsions were common, but within three to four weeks most of them were fit for discharge from hospital. One may conclude that these, in the five weeks since the first dose of toxoid was given, had fortunately developed sufficient immunity to protect them against part of the effect of the injection of 1·5 c.cm. of toxin, of which 0·004 c.cm. was the minimum lethal dose. The toxoid was of lower immunising efficiency than that commonly used. Our readers will make their own comments on a system which permitted the storage of toxoid and toxin in similar bottles in the same compartment of an ice-chest. Efficient control of all toxin made, the storage of it far from toxoid in different buildings or rooms, and the testing at the final stages imposed by the Therapeutic Substances Act provide a threefold defence against accidents of the kind in this country.

PSYCHOLOGICAL CLINICS FOR CHILDREN.

IT is a testimony to the health and vigour of psychological medicine in this country that clinics for the treatment of child behaviour disorders and for juvenile delinquency are growing up in London and in the provinces. In 1928 the Child Guidance Council established a fully equipped and staffed unit at Tudor House, Highbury, having the support of leading physicians and psychologists. It has received the recognition of the London County Council and the Board of Education. Under the authority of the University of London, a course of vigorous training is now in its second year at the London School of Economics for the benefit of future social psychiatric workers who take a university certificate in social science. In 1927 the Jewish Health Organisation of Great Britain had established a child guidance clinic on similar lines, and has also received the encouragement of the L.C.C. and the Board of Education. The Quest Clinic for Difficult Children under the directorship of Dr. Margaret Lowenfeld which has already done good work, has now changed its name to the National Institute of Child Psychology. It proposes to establish a comprehensive and ambitious course of instruction for the training of doctors and social workers in this important branch of medical psychology. In addition, it proposes to issue certificates of proficiency to doctors and social workers and intends to spread its activities and authority throughout the country. The multiplication of psychological clinics is all to the good, and it is certainly not desirable that they should follow the same pattern. But in our view, it would be regrettable if each new organisation were to claim the right to issue certificates of proficiency and to decide who shall and who shall not be competent to direct work in child psychology. Medicine is already overburdened with degrees and diplomas. When these have the backing of a university or of an old-established corporate body, the public can be certain that the curriculum is well balanced and not too specialised. But the institution of certificates founded on a course which has no official sanction or support is perhaps premature, since the label conferred by such certificates will have no general value. A multiplication of labels, however, is likely to bewilder the public, and cause them to lose faith in a movement where there are many authorities with diverse credentials.

DYSMENORRHŒA AND DISABILITY.

AMONG over 7000 women clerks employed at the Home Office of the Metropolitan Life Assurance Company of New York so much working time was being lost because of dysmenorrhœa, that Dr. Ruth Ewing was appointed to make inquiries.[1] She decided to study the effect of exercises and the correction of bad posture or the incidence of the pain; the patients selected for treatment being girls who were frequently absent or spent several hours in the rest room during each menstrual period. A menstrual history was taken and the patients were referred to the physiotherapist for grading as to posture and instruction in the exercises considered suitable. They reported to the physiotherapy department once a week for one or two months, but in most of them improvement was not noticed within two to four months and it was found necessary to supervise the exercises for from eight months to two years. The very mild cases cleared up with the Mosher exercise alone, consisting of contraction and expansion of the lower abdominal muscles independent of breathing; but for the more severe cases other exercises had to be added. In response to a questionaire sent to each patient with a request for an anonymous reply, 90 per cent. stated that they had benefited by the treatment, while the obvious and practical results of the work are shown by a decrease by 53 per cent. in the time lost to the company. In summarising her paper, Dr. Ewing states that among other factors, constipation plays a large part in the ætiology of dysmenorrhœa, and it is interesting to compare this conclusion and several others with the results obtained by the Medical Women's Federation in their investigation into the menstrual function during the school period.[2] It was found by them that 55 per cent. of 6099 schoolgirls had no pain or disability at all during the monthly period. Of the remainder, 700 had only slight pain, while absence from school amounted to less than 2 per cent. The figures, however, showed a tendency to rise, both in the incidence of pain and the disturbance to general health, as the length of the menstrual history increased, and this prepares us for the figures obtained by Dr. Ewing with girls working at the Metropolitan Life Insurance office. Here it was found that for the 7390 clerks, 1151 days of absence and 2670 visits to rest rooms were recorded between June and December, 1927. In view of the good results obtained by Dr. Ewing from exercises and correction of posture it seems possible that the regular exercise, games, and drill which form part of the routine of school life helped to produce a more healthy condition of the body. It is of interest to record that in the Medical Women's Federation investigation a definite statistical relation was found between pain and exercise, although it could not be decided which was cause and which was effect;

[1] Jour. Indust. Med., September, 1931, p. 244.
[2] THE LANCET, 1930, ii., 57.

Dr. Ewing's results suggest that exercise definitely benefited and decreased the incidence of pain. That the general attitude towards the menstrual period as a natural function should be a very important part of a girl's training was one of the conclusions reached from the Medical Women's Federation inquiry, and Dr. Ewing confirms this when she says that psychological factors such as self-discipline play a part in the treatment of dysmenorrhœa.

LYMPHANGIECTASIS AND CHYLORRHŒA.

ISOLATED and circumscribed lymphangiomata are a rare form of nævus which it is difficult to treat. Their ætiology is uncertain, but it presumably resembles that of the vascular types of nævus so common in the infant. Both varieties tend to grow with the child and on reaching a certain size to remain stationary, after which they usually persist indefinitely. The differences between lymphangioma and lymphangiectasis are not sufficiently emphasised and a case just reported by Ning [1] of Frankfurt should not be neglected. The patient, a woman of 34, was admitted to hospital in 1909 for a grouped vesicular condition on the internal aspect of the right thigh. She said it had been present since she was 11, and that regularly every fortnight a variable quantity (up to a litre) of white fluid had been freely discharged from the small blisters. This assertion was substantiated at the time, when it was found that a milky fluid could be collected at the approximate rate of 10 c.cm. in eight hours. She was again admitted in 1913 when it was further noted that the urine was often white—less so after a discharge from the vesicles in the thigh. Biochemical and microscopical examination proved this liquid to be chyle, and its quantity and appearance could be in some measure controlled by diet. Thus after a meal rich in fats and cream it would be milky and opalescent, while if fats were withheld it would become clear, or nearly so. In the course of a surgical attempt to relieve the condition, it was found necessary to tie two large lymph vessels which discharged their contents freely into the depths of the wound. At her third admission in 1931 there was a further increase in the number of vesicles and a considerable swelling, observed for three years, of the right leg. Lymphatic and chylous discharge is still present but not in such quantity as formerly, and soon ceases on elevation of the limb. Palpation of the two groups of vesicles elicits the sensation of fine crepitation. They are of two defined types, small vesicles and sac-like structures. Histologically, there is a general dilatation of the lymphatic system in the affected area, with cyst-formation on the surface. The description should thus be multiple lymphangiectasis with cyst formation and recurrent chylorrhœa. The ætiology as Ning says, is difficult. Most authors favour a purely mechanical cause leading to back pressure, but anatomical proof, even at autopsy, is wanting or inconclusive. In the case here cited Ning assumes a congenital error of communication between the lymph vessels of the right thigh and the chyle effluents from the mesentery of the same side. In support of this theory is the fact that the vesicles immediately below Poupart's ligament contained chyle from the earliest date of origin of the symptoms. According to Kaufmann the main chyle vessel empties itself into the left lumbar lymphatic trunk in 70 per cent. of all cases examined, but this finding does not invalidate Ning's view, for a junction between only a few lymph and chyle vessels would suffice to produce back pressure effects in the former. The points against a purely mechanical cause are two: first, that the lymphangiectases presented a centrifugal spread, and secondly, that the circumference of the leg remained normal and apparently withstood the hypothetical back pressure for 20 years.

[1] Derm. Woch., Sept., 1931.

URINARY CALCULI.

LITHIASIS was the subject discussed by a number of French urologists lately gathered at Vittel.[1] Prof. M. Loeper in an introductory paper on the causes of oxaluria and oxalate calculi pointed out that there are three possible sources from which oxalates may be derived: they may be taken with the food, they may result from fermentation in the intestinal canal, or they may be derived from the tissues. In any study of oxaluria the liver is of first importance since the condition often indicates disturbance of carbohydrate metabolism. That this is so is proved said Prof. Loeper by the fact that oxaluria is very commonly found in diabetics. In treatment attention must be paid to all these possible sources and the diet should exclude substances rich in oxalates, like rhubarb and haricot beans. Meat, he thinks, should be cut down—not so much because it is a protein as because it contains a large amount of sugar and from sugar may be derived oxalates. Exercise should be encouraged, and steps should be taken to ensure the complete oxidation of carbohydrates. Foremost among the remedies that help oxidation is insulin, and Loeper suggests that it may usefully be given in small doses even in non-diabetic cases. At the same time an attempt should be made to diminish the tendency towards precipitation in the kidney. Since precipitation of calcium oxalate is likely to occur in alkaline urine it is important to avoid giving alkalis in large doses and it is often useful to exhibit such drugs as acid sodium phosphate. Prof. F. Legeu, speaking on the indications for surgical intervention in cases of lithiasis, said that operation was desirable where calculus was associated with enlargement of the kidney, where stone was impacted in the ureter or where there was pyonephrosis. If stones were bilateral, operation was required for such symptoms as pain or marked hæmaturia. When a stone on one side had reached the ureter intervention was always necessary. In the less common case of a stone in a solitary kidney or in a horseshoe kidney, much would depend on whether the stone could be dealt with by pyelotomy or required nephrotomy. With a horseshoe kidney pyelotomy or partial nephrectomy was usually needed, the choice being made according to the effect of the calculus on the surrounding kidney. Prof. Merklen devoted his address to the treatment of lithiasis in children. After the fourth year of life, he said, two different classes of calculus were found, either uric acid and oxalate calculi or phosphatic calculi. A striking fact was that lithiasis was commoner in boys than girls. Very often there was a family history of stone and many patients showed signs of gastro-intestinal disturbance.

THE Semon lecture will this year be delivered by Mr. Douglas Harmer at 5 P.M. on Thursday, Nov. 5th, at the house of the Royal Society of Medicine, 1, Wimpole-street, W. His subject will be the Relative Value of Radiotherapy in the Treatment of Cancers of the Upper Air Passages.

[1] Presse Méd., Sept. 5th.

SPECIAL ARTICLES

A CLINICAL DESCRIPTION OF EPIDEMIC SONNE DYSENTERY.

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BACILLARY dysentery, both chronic and acute, is gradually coming to be recognised as not uncommon in this country. The epidemic reported below, which was observed in detail, demonstrates practically every type of case which may be met with in the acute form. Although bacteriological confirmation was obtained in only nine of the 21 cases, the evidence that the rest suffered from the same infection is overwhelmingly strong. It is not my intention to enter into the controversy regarding the nomenclature of the various dysentery organisms. Suffice it to say that in all the specimens which gave a growth Dr. W. M. Scott, of the Ministry of Health, to whom I am indebted for very valuable help, reported it as *Bacillus dysenteriæ* Sonne.

Twenty-four cases, consisting of 20 boys, the housemaster, the cook, and two dormitory maids, occurred in one house which contained 58 boys, besides the housemaster, his wife, and a domestic staff of nine. I propose to give the case histories first, and discuss them afterwards. The mildness of several of the cases is no excuse for not reporting them in detail, because evidence will be produced that some of them at least were infectious, and others probably would have been proved so if the vomit had been examined as well as the fæces.

The cases are reported in chronological order.

DESCRIPTION OF CASES.

CASE 1.—Male, aged 17, was sick after his tea on July 15th and had diarrhœa the same evening, which was stopped by taking milk of magnesia. No abdominal pain nor tenderness. Fæces not examined.

CASE 2.—Male, aged 16, vomited four times during the night of July 15th–16th, and had the mildest diarrhœa. No abdominal pain nor tenderness. Fæces not examined because at this stage there was little to suggest a bacillary infection.

CASE 3.—Male, aged 14, could not accurately date the onset of his symptoms, but certainly had diarrhœa on the 16th. He felt sick on the previous day. He had on the average two diarrhœic motions per diem until the 23rd, and on no day had he passed a formed motion. On admission (23rd) he had a slight headache, a temperature of 100·2° F., pulse-rate 70. The next day he passed a normal stool, but the Sonne organism was grown from a loose motion he had passed on the 23rd. He was put to bed and thenceforward passed normal stools.

CASE 4.—Male, aged 14, complained of nausea after lunch on the 16th, but did not actually vomit. No physical signs except temperature 100·6° F., pulse-rate 120. Was perfectly normal from the next morning. Fæces not tested.

CASE 5.—Male, aged 15, complained of nausea at 7 P.M. on the 17th, and vomited once during the night. He complained of abdominal pain which he localised by placing the flat of his hand over his umbilicus. No tenderness. Temperature 100·2° F. His bowels were opened normally that morning, and continued to be so. Fæces negative.

CASE 6.—Male, aged 19, vomited five times during the night 17th–18th, and was exhausted the next day and complained of pain in his lumbar muscles. Temperature 101·8° F., pulse-rate 70. An enema was necessary on the 19th as his bowels had not been opened for three days. Uneventful recovery. Fæces negative.

CASE 7.—Male, aged 14, felt exhausted on the 17th, and had a stiff neck which persisted until the next day. He had one loose motion that day, two on the following, and one on the next (19th). No abdominal pain nor tenderness. Temperature never above 99° F. nor pulse-rate above 80. *B. dysenteriæ* was grown from a stool passed on the 18th. He was one of the early cases, and was allowed to get up on the 19th before the true nature of the infection was known. He was put to bed again on the 22nd, and passed one stool which contained considerable mucus. *B. dysenteriæ* was grown from this stool. From then onwards he passed perfectly normal stools, and got up on the 24th.

CASE 8.—Male, aged 16, vomited twice during the evening of the 17th and had a little diarrhœa. Normal temperature. He felt quite well next day and did exams. Diarrhœa recommenced on the 21st, when he had three loose motions during the night. That day and the next he complained of vague abdominal pain between the umbilicus and the pubis. Temperature 102° F., pulse-rate 80. The next day he passed a motion with a little mucus, and the following day a loose normal motion. Fæces negative.

CASE 9.—Male, aged 17, felt sick on the 18th and the next morning, but actual emesis did not take place. No constitutional signs. Fæces negative.

CASE 10.—Male, aged 15, was sick at 4 P.M. on the 18th and five times during the night. No pain nor tenderness. Temperature 99° F. Bowels normal. Fæces negative.

CASE 11.—Male, aged 17, had one diarrhœic motion on the 18th. He complained of headache on the 22nd. Temperature 100·6° F., pulse-rate 70. On the following day he had four light loose undigested motions containing mucus. He had no pain, but was tender over the sigmoid colon and cæcum. Fæces negative.

CASE 12.—Male, aged 14, was admitted on the 18th complaining of wanting to go to stool. He had slight nausea. On the 17th he had one loose motion, and the following day had four diarrhœic motions. He had severe abdominal pain round the umbilicus. He was decidedly tender over the umbilicus, and over a gurgling palpable descending colon. The initial temperature of 102° F. gradually subsided. The pulse-rate quickly fell from 90 to 60. The next day he still had abdominal pain which was relieved by defæcation. On the 21st he passed one motion with considerable mucus, and a second streaked with blood. From then on he made an uneventful recovery. Fæces positive.

CASE 13.—Male, aged 13, vomited at 2 A.M. on July 18th. Temperature 100° F., pulse-rate 80. No diarrhœa nor abdominal pain. Fæces negative.

CASE 14.—Male, aged 16, vomited at 1 A.M. on the 19th, and twice during the night. Temperature 99·8° F. No diarrhœa. Fæces negative.

CASE 15.—Male, aged 53, woke up in the early hours of the 19th with uncomfortable feeling in the abdomen, and had two diarrhœic motions before breakfast. This was the extent of his gastro-intestinal disturbance, but he felt seedy for two days. His fæces were negative.

CASE 16.—Male, aged 17, felt nauseated on the night of the 20th. The next day he had three loose motions. On the 22nd temperature 101·6° F., pulse-rate 96. That day he had much blood and mucus in his fæces, and on the following day he had five motions which contained little mucus. His temperature remained high (100·4° F.), but the pulse fell to 70. From then on he recovered quickly. Fæces positive.

CASE 17.—Male, aged 18, had a slight frontal headache on the 21st which lasted for one day. That day he vomited, and had diarrhœa with much mucus and streaky blood in his motion. Pulse-rate 120, temperature 104° F. The next day he had four diarrhœic motions. His tongue was slightly coated, and he perspired freely. From the 23rd onwards his pulse and temperature were normal, and he made an uninterrupted recovery. His fæces were positive.

CASE 18.—Male, aged 16, vomited on the night of July 21st. He felt well the next day, but on the 23rd he passed a fluid stool containing a small amount of mucus. Temperature 99·4° F., pulse-rate 75. From then on he made a rapid recovery. Fæces positive.

CASE 19.—Male, aged 17, felt like lead on the 21st. He had three motions that night. Temperature 104° F., pulse-rate 104. These fell to normal in two days. On the 22nd he had three very loose motions which could accurately be described as yellow peasoup (or lentil soup). On the 24th three more loose stools with considerable mucus were passed, and the next day he again had three motions, this time containing blood. Except for slight tenderness to the left of the umbilicus on the 22nd he had no physical signs, nor did he feel ill after the diarrhœa commenced. Fæces positive.

CASE 20.—Male, aged 15, who had had an appendicectomy in May, 1931, had diarrhœa before breakfast on the 22nd. He had intermittent slight abdominal pain and tenderness over the descending colon, which was still tender and became palpable on the next day when he passed a normal stool. From that day he made a quick recovery. Fæces positive.

CASE 21.—Male, aged 16, complained of generalised aches on the morning of the 22nd, and of being feverish in the afternoon. He had diarrhœa all the morning. That evening his temperature was 100° F., rising to 101° F. next day. His pulse-rate was 115, but gradually fell to normal. He complained of slight headache. On the 23rd he passed two stools, first mixed with much mucus, and the second consisting of practically nothing but blood and mucus. The following day he passed one nearly normal stool, and five with almost nothing but blood and mucus. He had at this time vague pain in his lumbar muscles. For the next two days he passed formed stools coated with a little mucus and blood, and from then on convalesced normally. Fæces positive.

Twenty-one Cases of Epidemic Sonne Dysentery.

No.	Age.	Temp. (° F.)	Pulse.	* Abdominal pain. † Tenderness.	Other pain.	* Diarrhœa. † Vomiting.	* Blood. † Mucus.	Duration.	Fæces.
1	17	98·8	—	Nil.	Nil.	*Slight. †1.	Nil.	1	N.E.
2	16	99	—	„	„	*Mild. †4.	„	1	„
3	14	101	70	„	Slight headache.	*2. †Nausea.	„	9	Pos.
4	14	100·6	120	„	Nil.	*Nil. †Nausea.	„	1	N.E.
5	15	100·2	90	*Umb. region. † Nil.	„	*Nil. †1.	„	2	Neg.
6	19	101·8	70	Nil.	Lumbar muscles.	*Constipated. †5.	„	1	„
7	14	99	80	„	Stiff neck.	*1. †5.	*Nil. †Pres.	7	Pos. 2.
8	16	102	80	*Above pubis. †Nil.	Nil.	*3. †1.	*Nil. †Pres.	7	Neg.
9	17	98·4	70	Nil.	„	*Nil. †Nausea.	Nil.	1	„
10	15	99	64	„	„	*Nil. †5.	„	1	„
11	17	100·5	70	*Nil. †Cæcum sigmoid.	„	*4. †Nil.	*Nil. †Pres.	3	„
12	14	102	95	*Severe. †Umb. and d.c.	Tenesmus.	*5. †Nausea.	*†Pres.	6	Pos.
13	15	100	80	Nil.	Nil.	*Nil. †1.	Nil.	1	Neg.
14	16	99·8	64	„	„	*Nil. †3.	„	1	„
15	54	Nt.		*Slight. †Nil.	„	*2. †Nil.	„	1	„
16	17	100·6	96	Nil.	Slight headache.	*5. †Nausea.	*†Pres.	3	Pos.
17	18	104	120	„	Nil.	*3. †1.	*Nil. †Pres.	3	„
18	16	99·4	75	„	„	*2. †1.	*Nil. †Pres.	1	„
19	17	104·4	104	*Nil. †Left of umb.	„	*3. †Nil.	*†Pres.	5	„
20	15	99·4	80	*Slight. †D.c.	„	*2. †Nil.	Nil.	2	„
21	16	103	115	Nil.	Head and backache.	*6. †Nil.	*†Pres.	5	„

Nt. = Not taken. Umb. = Umbilical. Umb. and d.c. = Umbilicus and descending colon. N.E. = Not examined.

The history of the following cases which also occurred in the house are given to make the description of the epidemic more complete. Unfortunately, as they were not under medical care, notes about physical examinations are unavailable.

CASE 22.—Cook, aged 27, had slight vomiting and diarrhœa on July 22nd–23rd which completely subsided in two days with rest in bed. Three stools (one during the attack and two subsequent ones at weekly intervals after a saline purge) were negative.

CASE 23.—Dormitory maid, aged 18, a poor witness, had slight abdominal pain and six diarrhœic motions on the 21st, but since then has been perfectly normal.

CASE 24.—Dormitory maid, aged 17, in charge of the sickroom, had four loose stools on the 20th and two the next day. Slight abdominal pain. Rapid recovery. Neither maid was in bed nor were their fæces examined.

CLINICAL FEATURES.

Temperature and pulse.—All the cases were febrile; some very mildly so, but two had a temperature of 104° F. The average was 100·6° F. The pulse-rate was not raised in proportion, and had no special characteristics. Respiratory complications which A. M. Fraser and J. Smith [1] consider frequent were completely absent in these cases.

Pain.—This was not a marked feature. Case 12 was the only one who had severe pain, which lasted for 48 hours, and nobody but he had tenesmus. Case 5 had pain which is usually interpreted as enteritis. Three others had slight discomfort.

Tenderness.—Cases 11, 12, 19, 20 were tender over the cæcum and sigmoid, over the umbilicus and cæcum, the left of the umbilicus, and over the descending colon respectively.

Vomiting.—This actually took place in 11 cases, and nausea was complained of in five others.

Stools.—The accompanying table shows that 12 had diarrhœa, the intensity varying from one to two loose motions up to as many as six a day, and lasting as long as nine days. Four cases had obvious blood, and nine mucus, in their motions.

Bacteriological examination.—The stools were examined in 18 cases, and the Sonne organism grown in nine. All of these had diarrhœa.

Duration.—Varied from one to nine days, the average being three.

TREATMENT.

The treatment given was complete rest in bed until all symptoms had subsided. Fluids only were given while there was diarrhœa or vomiting, but as soon as convalescence commenced a liberal diet was substituted. As fresh cases were still occurring up to the 22nd it was decided to ask parents to have symptomless boys home. They all went on the 23rd or 24th, and none of them carried the infection.

SOURCE OF INFECTION.

It is notorious that the source of these infections is seldom found. The milk-supply to the house was the same as that supplied to two other boarding houses which had no cases, nor was there any case of diarrhœa on the farm. In cases where the water-supply is contaminated, usually the outbreak is more general (cf. epidemic in Ogmore and Garw).[2] There was no evidence of a carrier in the house. We are therefore left with the probability that the infection was introduced into the house by contaminated food. The suspected foods were veal-and-ham pie (made in the house from fresh materials), strawberries, salad, all eaten on the 16th; tinned fruit and fish pie, eaten on the 18th. Of the 37 unaffected boys, 30

[1] Quart. Jour. Med., 1930, xxiii., 253.
[2] Quoted in Ministry of Health, Special Report Series No. 14.

ate the veal-and-ham pie, 35 the salad, 32 the fish pie, 36 the strawberries, and 37 the tinned fruit. Of those affected the proportions eating these foods were practically identical. Although it is impossible to incriminate any of these articles, it is highly probable some uncooked food was the source of the infection. If the source was not traced, the epidemic shows how easy it is for the infection to spread when we consider how Case 3 and the two dormitory maids did not realise the significance of their symptoms, despite the fact that they were well aware of the epidemic. Case 3 also shows that the organism can still be grown from the fæces as late as the ninth day.

DISCUSSION.

The word dysentery carries with it the implication of diarrhœa. Actually in Sonne dysentery, as has been pointed out before,[1] vomiting or nausea is a more common feature. It is regrettable that custom has ordained that the fæces only are examined. It seems probable that if the vomit had been examined as well many more positive results would have been obtained. The reason for this contention is that several of those who developed diarrhœa had much the same initial symptoms as those who had vomiting only. Certainly vomiting seems beneficial; those who vomited most had little or no diarrhœa; those who had the most severe diarrhœa and pain scarcely vomited at all. The vomiting is probably not due to the toxæmia or to a true inflammation, but to an irritation of the gastric mucosa. That the toxæmia is not the cause is obvious, because in those cases where it was greatest, as judged by the temperature, pulse, and gastro-intestinal upset, vomiting was minimal. Post-mortem examination on victims of Sonne dysentery are rare, but in a fatal case reported by R. L. Nelson,[3] where there was extreme vomiting thought to be due to ketosis, the œsophageal and gastric mucosæ showed no ulceration but only engorgement, as might have been consistent with the fatty liver which was present. Sonne organisms were grown from the intestinal mucosa and the right ureter in this case. We are therefore left with the probability that the vomiting is caused by gastric irritation, because it occurs when the contaminated food is likely to be in the stomach. Assuming that vomiting or nausea indicates a local lesion in the stomach and giving to other symptoms a rather arbitrary localisation, then the order of frequency in which the segments of the gut are involved are:—

Stomach (nausea or vomiting) ..	16
Small intestine (diarrhœa)	12
Large gut (blood or mucus)	9
Rectum (tenesmus)	1

I will not undertake the unenviable task of suggesting a new name for the disease, although dysentery is patently a misnomer.

SUMMARY.

An epidemic of Sonne dysentery among schoolboys is described. The mildness of the infection is a cause for its spread. The frequency with which upper portions of the gut are involved is commented upon. Rest in bed and a fluid diet cured all the cases quickly, whereas two cases which were ambulatory had symptoms and were infectious for a much longer period. It is hoped the vomits as well as the stools will be examined in future epidemics.

I wish again to thank Dr. Scott for his great help. I also gladly acknowledge my indebtedness to many others, especially the nursing staff of the sanatorium and the matron of the boarding house.

[3] Amer. Jour. Child. Dis., 1931, xli., 15.

THE LÜBECK TRIAL.

(FROM OUR BERLIN CORRESPONDENT.)

THE much discussed disaster in Lübeck, where 75 children died and 168 others were injured after the administration of B C G vaccine, has now reached its final stage in the prosecution of three medical men, Dr. Ernst Altstädt, Dr. Georg Deycke, Dr. Max Klotz, and a laboratory assistant, Frl. Anna Schütze, for injury and manslaughter by negligence. An action for damages has also been brought by the parents of the children. The trial began before the Lübeck Criminal Court on Oct. 13th. Nineteen medical experts have been summoned to give evidence and the number of witnesses, lawyers, and plaintiffs is so large that the usual premises of the court proved too small and a gymnasium is being used for the hearing of the case. Three views have been expressed on the cause of the disaster. First that the B C G became virulent after it had been sent to Lübeck; second that owing to the negligence of the laboratory assistant it had been mixed with virulent tubercle bacilli; third, that Prof. Deycke had purposely added virulent bacilli to increase the efficacy of the vaccine. The position is rendered the more difficult by the vaccine having been destroyed after the first fatal cases had occurred.

Dr. Altstädt, medical director of the Lübeck Health Office, was examined first. He stated that in 1928 he had drawn the attention of the Lübeck authorities to Calmette's success in the combat against tuberculosis. Examined by the prosecution he said he had not informed the authorities of the doubt expressed by the German Health Office as to the efficacy of the B C G and of its warning against the use of B C G in patients until further research had been made. Since this warning was issued B C G had been used in several countries without harm and the warning had thus become obsolete. An opinion had, he said, been passed by the Hygienic Section of the League of Nations, to which members of the German Health Office belonged. He had lately inoculated his own child with B C G vaccine, but on examination agreed that he had used the original B C G received from the Pasteur Institute in Paris. The reason for this was that the compound was no longer prepared in Lübeck after the disaster. He did not know that a strain of virulent tubercle bacilli had been purchased from the Kiel University Laboratory at the same time as the B C G. Prof. Kolle, head of the institute for experimental therapy in Frankfort, asked Dr. Altstädt whether he did not know that according to German regulations every serum must be examined in his institute before being used for patients. Dr. Altstädt's reply was that he believed the compound to be as innocuous as milk and sugar water. He had not performed experiments in animals with the compound; he had believed that the compound would be prepared in the Lübeck laboratory according to Calmette's directions. He had given the original culture to Dr. Deycke. Examined by the prosecutor he admitted that he had not informed the parents that the B C G would be inoculated; he had let them believe that it would be mixed with the food because they would possibly have been opposed to an injection. Prof. Jahn, of the Berlin Hygienic Institute, asked the accused whether the mortality from tuberculosis was so high in Lübeck as to warrant severe measures. Dr. Altstädt gave some figures, adding that the efficacy of the B C G would have become obvious

only after a couple of years. Dr. Uhlenhut (Bonn) stated that mortality from tuberculosis had decreased throughout Germany for several years past owing to the work of the advisory boards and anti-tuberculosis dispensaries.

The case is expected to last for three or four weeks.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

CHAIR OF CHILD LIFE AND HEALTH.

Dr. Charles McNeil, the first holder of the Edward Clark chair of child life and health, struck a new note in his inaugural address. The name of the chair, he said, had been well chosen, for it enlarged the scope of the subject and included both the diseases of children and the child himself. For the first time, the medical study of children becomes overtly preventive as well as curative. In sketching the methods of sound training in children's diseases and health, Prof. McNeil emphasised the need not only for ordinary clinical study of diseases in the hospital, but for training in the work now covered by the child welfare centres and special treatment centres. This applies to nurses, health visitors, district nurses, and nurse-midwives, as well as to medical students. The work of teaching in the new chair should include the special training of each of these types of nurse. The education of the parents must also be achieved by appropriate methods. Prof. McNeil, in his quietly delivered and unassuming lecture, showed in detail how he proposed to relate all these phases of child welfare institutions to the scientific teaching of the chair. This is essentially new as a programme and falls in with the proposals of the General Medical Council for a more adequate development of the preventive standpoint in medicine.

Despite improvements in sanitation and the diffusion of knowledge, said Prof. McNeil, there remained a great mass of disease among children, especially in the first two or three years of life. There were the fatal diseases and particularly these three—broncho-pneumonia, tuberculosis, and marasmus. There were the crippling diseases, such as infantile paralysis and again tuberculosis. There was the quite large group of mental defect, in which, from a variety of definite causes, and apart from heredity, there had been produced lifelong crippling of the mind. And there was a great deal of chronic ailing and nervous disorder which produced lasting impairment of health. By far the greatest part of this aggregate of sickness and death was preventable. The task of education of the people belonged to the doctor and the nurse engaged in medical practice. It was the immediate work of medicine to apply and improve its remedies for these diseases; but the greater and more hopeful work was to study and to teach the rules and conditions by which the health of the child was preserved.

BIOLOGY IN THE CURRICULUM.

Prof. J. Ritchie, of Aberdeen, in his inaugural address, said that the University has taken the bold step of breaking with the old tradition of the first year's curriculum for medical students. The long-established subjects of botany and zoology were to be replaced by a course in biology, dealing with the principles of life as a whole, and with the structures and habits of plants and animals which best illustrate those principles. This departure had been made after much consideration in an endeavour to improve the medical course, and he hoped that in gaining a knowledge of the underlying principles of life each student would gain something of real value to the understanding of the art and practice of medicine.

The position of biology in the curriculum has been under discussion for many years, but the proposed course is independent of the practical question whether the preliminary courses covered by botany, zoology, physics, and chemistry should, to a certain extent, precede the five years' curriculum proper or should be concurrent with it. On this question also Aberdeen University takes a line of its own. But the new course in biology involves the more fundamental consideration of the scientific groundwork of a curriculum.

CHILD GUIDANCE.

Scotland has now several child guidance clinics, and the latest has been opened at the Notre Dame Training College, Dowanhill, Glasgow. There the child will be studied from all angles—physical, emotional, intellectual, and environmental. The staff must include a psychiatrist, a psychologist, and a social worker. Children with definite organic disease, mentally defective or epileptic are already dealt with at special schools. The clinic will confine itself to the functional adjustments necessary to the individual as studied from the various standpoints. In the compound populations of our great cities, where various racial strains emerge, the proportion of cases needing such study is considerable.

SPECIAL SCHOOLS IN SCOTLAND.

The county of Lanark, where the veteran reformer Sir Henry Keith is chairman of the education committee, takes a leading place in the provision of special schools. As Robert Owen's infant school at New Lanark attracted world-wide attention in the early days of the nineteenth century, so the special schools of the county—if progress elsewhere had not been so great—might well make as strong an appeal in the twentieth century. The latest in this category is the Dalton Special School for Invalid Children. The cost is estimated at £26,000 for 230 children, and Dr. John Jardine, assistant secretary to the Scottish Education Department, says that he has never been in a school which, to his mind, approaches more closely the ideal. To-day in Scotland, he stated, provision was made for some 5000 children suffering from physical handicap and 3800 children suffering from mental handicap. These schools had a very great influence on Scottish education, modifying the system of education for the normal child. They made us realise the value of the open-air structure, the need for frequent intervals from intellectual effort, and the need for movement.

DUNFERMLINE RHEUMATISM CLINIC.

The medical welfare committee of the Carnegie Dunfermline Trust have made arrangements to hand over the apparatus of their orthopædic clinic at the baths to the managers of Dunfermline and West Fife Hospital. The trustees have also decided to provide a centre for the investigation of juvenile rheumatism at their school clinic. This centre will enable the medical practitioners to collaborate with a specialist in children's diseases. The scheme is meanwhile an experiment and its continuance will depend upon the experience gained in the early stages.

Incidentally, it may be said that the work of the Carnegie College of Hygiene has been materially

altered. The men have been removed to Glasgow, where Dr. Alister Mackenzie, the late superintendent, has also gone. The College will be reserved meanwhile for the training of women. These changes really constitute a break-up of the unity that has marked for all these years the excellent work of the Dunfermline Carnegie Trustees.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SIR HAWTREY BENSON.

You noted last week the death on Oct. 9th of Sir John Hawtrey Benson at his residence, Fitzwilliam-square, Dublin. Although 88 years of age—he was born on Feb. 28th, 1843—he was in excellent health and full enjoyment of life and faculties until about a fortnight before his death, when he was attacked by broncho-pneumonia. He was in a line of medical hierarchy, for his father, Charles Benson, held the chair of medicine in the school of the Royal College of Surgeons in Ireland, and was President of that College in 1854–55, and also one of the founders of and physician to the City of Dublin Hospital. The son was educated at Trinity College, Dublin, obtaining his medical degrees in 1865. He became a Fellow of the Royal College of Physicians of Ireland in 1873, and proceeded to the degree of Doctor in Medicine of Dublin University in 1874. In 1911 he was elected to the Presidency of the Royal College of Physicians of Ireland, and while holding that office the degree of LL.D. was conferred on him by the University of Dublin during the bicentenary celebrations of its School of Physic in 1912. Sir Hawtrey was for many years one of the physicians to the City of Dublin Hospital, but resigned that position nearly 40 years ago, being then appointed consulting physician. He also held for many years the post of medical adviser in Ireland to the Colonial Office. Of recent years he did not engage in practice, but maintained his medical interests, and kept in touch with a large circle of professional friends. A man of dignified presence with an old-world courtesy of manner, he was a man of wide culture, genuine kindliness, and most upright character. His wife died a few years ago, and there were no children.

MEDICAL FEES FOR GIVING EVIDENCE IN COURT.

Judge Davitt, of the Dublin Circuit Court, commented strongly from the Bench last week on the inadequate fees often offered to medical men for attendance at, and giving evidence in, court. He stated that his court could not carry on its work were it not for the coöperation of the medical profession, and he hoped that solicitors would recognise that fact, and that ridiculous fees such as a guinea and a half would not be offered to medical men for attendance in court. The present position is, indeed, almost intolerable. A medical man, who often has given his medical services gratuitously, as, for example, in hospital work, is compelled, by subpœna, to attend and give evidence in court for a fee of one guinea and a half and his bare travelling expenses. The attendance may occupy half a day or even longer. It is, of course, true, that should a solicitor require a report in advance the medical witness is in a position to make terms for suitable remuneration, but if the solicitor is willing, as often happens, to take his chance, the medical man is powerless.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.

(FROM A SPECIAL CORRESPONDENT.)

The sixth council meeting of the Medical Women's International Association was held in Vienna from Tuesday, Sept. 15th, to Saturday, Sept. 19th, 1931, by invitation of the Austrian Medical Women's Association, supported by that of the President of the Austrian Republic and the burgomaster and municipality of Vienna. The meeting was followed by a three-day visit to Buda-Pesth, where members of the congress were entertained by the Hungarian Association of Medical Women. Some 200 members of the Medical Women's International Association attended the general meetings and scientific sessions, including 30 British medical women. Official delegates were present representing 18 different countries, including U.S.A., Japan, India, the Dutch and British East Indies, and the principal countries of Northern, Western, and Central Europe.

Scientific Discussions.

At the scientific sessions the subjects for discussion were: (1) The Rôle of Medical Women in Exotic Countries; (2) The Legal Protection of Women Workers. Dr. Margaret Balfour, president of the Indian Medical Women's Association, and Madame Poli-Garnier, of Algiers, were the rapporteurs généraux for the first question. Dr. Dagny Bang (Norway), Dr. Adler-Herzmark (Austria), and Dr. Sorrentini (Italy) acted in a similar capacity in respect of the second.

A questionaire on each subject had been circulated some months previously to medical women with special experience in a large number of countries, the replies received were analysed and summarised by the rapporteurs, each dealing with those from a certain group of countries. The reports were printed and circulated to all members prior to the meetings. Discussion was opened by the rapporteurs, who gave a short résumé of the salient points and significant conclusions contained in their reports. Those who had sent in replies were afforded the opportunity of speaking to their papers briefly, if they so desired; the question was then thrown open to public discussion. This admirable method of procedure resulted in an extremely lively and well-informed discussion on both subjects.

The Rôle of Medical Women in Exotic Countries.—There was unanimity of opinion that a large amount of preventable illness and maternal mortality in exotic countries is due to the fact that the women are precluded by custom and religion from treatment by men doctors, and have not the facilities for consulting women doctors. The council unanimously passed a resolution emphasising the desirability of affording increased facilities for the treatment of native women by doctors of their own sex. A standing committee was appointed to go fully into the matter, and to consider what steps might usefully be taken to improve opportunities and conditions of work for medical women in exotic countries, in order to attract the best type of woman to that field.

Legal Protection of Women Workers.—This question proved to be much more controversial. Those countries where the workers are highly organised, the conditions of labour relatively good, and the standard of living high, were opposed to any differential legislation for women workers, on the grounds that it was in practice a restriction on their "right to work," and hampered them in the competition of the labour market without affording them compensatory advantages. A further point made by the opponents of such legislation was that it was nowhere based on any scientific data as to the relative ill-effects on men and women of the so-called injurious conditions. The supporters of differential legislation for women were all from those countries where there

is a real danger of the exploitation of the workers of both sexes, and where the position of women is much less favourable than that of men. After prolonged discussion a media via was found, and resolutions were unanimously passed urging the necessity: (1) For the best possible legal protection of the health of the worker, irrespective of sex, including adequate medical inspection and examination in the case of all potentially injurious occupations. (2) For the provision of a special system of insurance for maternity.

The council also passed a unanimous resolution to the effect that the Medical Women's International Association uphold the principle that the appointment or dismissal of women medical officers should be based solely upon their efficiency, and that marriage per se should not be a bar to their employment.

The subjects chosen for discussion at the next congress were: (1) the effects of sport and physical education on women (with special reference to menstruation and pregnancy); (2) birth control.

Scientific Tours and Hospitality.

The official delegates had the honour of being received by the President of the Austrian Republic in the Rathaus. In the course of a cordial address of welcome he emphasised the great importance of international goodwill and mutual understanding for the preservation of world peace and the building up of international prosperity. An object which a congress such as that of the Medical Women's International Association was especially calculated to forward. He spoke warmly of the admiration and regard which was felt for medical women in Austria, and of his personal appreciation of the great part which medical women were playing all over the civilised world in the prevention and treatment of disease and suffering, and in the promotion of the future welfare of mankind. In the intervals of the scientific and business sessions tours were organised to visit the principal hospitals and institutions, including the excellently constructed and equipped municipal flats, complete with creches, restaurants, and kindergartens for the children of mothers obliged to go out to work. These admirable buildings undoubtedly represent the greatest advance yet made in the provision of accommodation for the working and poorer middle-classes.

The members of the congress were throughout most hospitably entertained, the social functions included receptions by the Viennese Association of Medical Women, by the French officers of the Medical Women's International Association, and by the Women's Club. The direction of the beautiful "Diana Bad" entertained them to luncheon, and to see the excellently equipped medical baths. They were given tea on the terrace of the hotel-restaurant of Cobenzl, on the slopes of the lovely Wiener Wald overlooking Vienna and the Danube. They were the guests of the spa of Baden, where they were entertained at a luncheon in the famous kur house, and a delightful whole-day excursion was arranged to the Semmering, the alpine health and pleasure resort some 50 miles from Vienna, where they were entertained at one of the leading sanatoriums.

From Vienna members proceeded to Buda-Pesth, where they were again warmly welcomed by the Hungarian Medical Women's Association, and entertained with the greatest hospitality. Facilities were afforded them for seeing the chief medical and social institutions of the city, as well as its many historical buildings and natural beauties. Special visits were paid to the famous springs which supply over 13,000,000 gallons of water daily.

NEW NURSES' HOMES.—Lord Derby recently opened a new nurses' home at Wigan Infirmary which has cost over £13,000. A building originally intended for the care of infectious cases occurring in Ipswich Mental Hospital has been enlarged and adapted as a home for 34 nurses.

MEDICINE AND THE LAW.

Successful Claim by Hospital.

IN a recent case, noted in the *Solicitors' Journal*, a county court judge had to decide what was the proper charge for a hospital to make for medical treatment in a private ward. The patient, a bank cashier, had asked to be placed in the private ward. The hospital charged him for 11 weeks' treatment at the rate of six guineas a week. He paid 50 guineas on account and was sued for the balance. In his defence he seems to have relied on two contentions. The first was in some sort an allegation of negligence. He said that he had been discharged from the hospital on one occasion against the opinion of the sister, that he had become delirious the same night, and that he had to be readmitted a month later. It may be assumed that the judge did not find any substance in this allegation as an answer to the claim; for judgment was eventually given in favour of the hospital for the amount claimed. The second line of defence was that the usual charge was only about three or four guineas a week, and that, if the patient had known he would be charged six guineas a week, he would have arranged to go elsewhere and pay less. In this class of case, as soon as it is established that the treatment was not meant to be gratuitous, the law assumes an implied contract to pay what is reasonable. The county court judge held that in the circumstances the charge of six guineas a week for a private room was not unreasonable. Judgment was given for the amount claimed by the hospital, the court ordering that £2 be paid monthly.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 10TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 34 (last week, 41); scarlet fever, 1840; diphtheria, 908; enteric fever, 36; pneumonia, 700; puerperal fever, 48; puerperal pyrexia, 107; cerebro-spinal fever, 26; acute poliomyelitis, 18; acute polio-encephalitis, 1; encephalitis lethargica, 9; continued fever, 1; dysentery, 11; ophthalmia neonatorum, 101. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 13th–14th was as follows:—Small-pox, 75 under treatment, 4 under observation (last week 87 and 5 respectively); scarlet fever, 1554; diphtheria, 1419; enteric fever, 19; measles, 125; whooping-cough, 363; puerperal fever, 12 (plus 10 babies); encephalitis lethargica, 219; poliomyelitis, 6; "other diseases," 158. At St. Margaret's Hospital there were 20 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 7 (1) from measles, 3 (1) from scarlet fever, 16 (2) from whooping-cough, 32 (6) from diphtheria, 47 (8) from diarrhœa and enteritis under two years, 33 (1) from influenza. The figures in parentheses are those for London itself.

Manchester reported 2 deaths from measles. Birmingham and Liverpool each 3 deaths from whooping-cough, Newcastle-on-Tyne, 2. Liverpool and Hull each 3 deaths from diphtheria, Ipswich, Birmingham, Manchester, and Blackpool each 2. Diarrhœa was credited with 7 deaths at Birmingham, 3 each at Birkenhead and Liverpool. Manchester attributed 4 deaths to influenza.

The number of stillbirths notified during the week was 252 (corresponding to a rate of 39 per 1000 births), including 53 in London.

POST-GRADUATE LECTURES

COURSES for former students were held last week at University College Hospital and the London Hospital. The following summaries continue the series begun in our last two issues. Mr. Eardley Holland and Mr. Norman Patterson spoke at the London, and Mr. Clifford White at University College.

STERILITY.

(MR. EARDLEY HOLLAND.)

UNTIL recently the routine treatment of sterility has been dilatation, curettage, and correction of uterine displacement. Some of this treatment has probably done more harm than good. We now realise that sterility depends on a combination of factors affecting both husband and wife. In every case we have to consider what local and constitutional abnormality may be responsible. Very often there is more than one.

It takes two to make a baby. Even conservative investigators say that in 20 per cent. of cases of sterility the male is to blame, and before doing anything to the wife—unless there is some obvious error—one should make a point of seeing the husband. After he has had a physical overhaul it will be necessary to examine the semen. Probably a condom specimen is best for this purpose, but massage of the prostate is effective. The normal number of spermatozoa is about 100,000,000 per c.cm. and a count of 60,000,000 or less indicates relative infertility. This would not matter much if the fertility of the wife was high, but where it is low in both partners there is likelihood of sterility.

Any septic focus or other cause of debility may diminish the number of sperms; so also will a diet low in protein and insufficient in vitamins. Endocrine disorders are of great importance and even a small amount of hypothyroidism may produce sterility. The same is true of pituitary defects. Speaking generally, we may do a lot of good by attending to the husband's general health and by insisting on exercise and a generous high-protein diet.

The old idea was that most cases of sterility in the female were due to narrowing of the cervical canal—the "pinhole os." During the last few years, however, we have come to understand the importance of blockage of the Fallopian tubes. This may be complete or it may only be a "stickiness" of the tubes in which the lumen is closed by delicate adhesions between folds of mucosa.

We now have means of testing the patency of the tubes. The first apparatus for this purpose was the one devised by the American, Rubin, who passes compressed air into the peritoneal cavity through the uterus. The sound of the gas escaping from the fimbriated extremities can be heard with a stethoscope, though it is doubtful whether we can say on which side it is passing. But this gas test, though a great advance, is not altogether satisfactory. It is mortifying to get a negative result on one occasion and a positive on another, and such errors are readily caused by stickiness or kinking of the tube, the latter due perhaps to retroflexion. Moreover, although Rubin's method shows blockage it does not show where it is, and this matters a great deal if there is any question of going on to operate. Surgery is almost useless unless the block is in the outer end of the tube.

The introduction of lipiodol has now made things much easier and it has become a simple matter to test the patency of the tube. An anæsthetic is not necessary; indeed, it is undesirable because it might mask pain. The patient receives one-sixth of a grain of morphia half an hour beforehand. She is placed in the lithotomy position and some 10 c.cm. of lipiodol are passed into the uterus through a uterine catheter to which a 20 c.cm. syringe is attached. A radiogram is then taken and if the tubes are patent the lipiodol will be seen running into the peritoneal cavity. Another radiogram may be needed on the next day.

This method shows whether the tube is open or closed, and, if it is closed, *where* it is closed. It therefore indicates whether operation is needed and whether it has a reasonable chance of success. Before making such an examination, however, one must be sure that there is no active inflammation of the tubes; for cases of peritonitis are not unknown where this precaution is ignored. Apart from this lipiodol is quite innocuous, and indeed a surprisingly large number of pregnancies have followed its use. This suggests that it has therapeutic value.

The constitutional causes of sterility in women resemble those in the male. All women who come to the out-patient department at the London Hospital complaining of steraity are put on a diet; they are told to eat the beil English meat and supplement their meals with cod-liver oil. In the female, however, the most important development of late years has been our new knowledge of the ovarian hormones. The ovaries, it is now clear, cannot act without stimulation by the anterior pituitary gland. A great many sterile women are of the fat and flabby type with a great deal of hair, often with a male distribution. Menstruation has begun late and is probably scanty. If these women are given active preparations of thyroid and anterior pituitary extract the results are often miraculous. Pregnancy sometimes begins almost at once. I usually give half a grain of desiccated thyroid every night for one month and raise the dose by half a grain each month until the patients are taking two grains each night. They have a suitable dose of an active pituitary extract every night and morning.

In conclusion I may mention a type of sterility where absence of children is really due to frequent early abortion. Normally ovulation takes place about the middle of the menstrual cycle and thereafter the survival of the fertilised ovum depends on its being embedded satisfactorily in the decidua. The presence of suitable decidua depends in turn on the development of the corpus luteum. The kind of case I have in mind is one in which a woman goes perhaps 14 days over her usual time and then has rather a heavy period. I believe this sometimes represents a very early abortion due to failure in the function of the corpus luteum. If in such a case an extract of corpus luteum is given during the second half of the menstrual cycle, it is quite likely that the ovum will survive and pregnancy will go on to term.

COMPLICATIONS OF SUPPURATIVE OTITIS MEDIA.

(MR. NORMAN PATTERSON.)

ROUGHLY three types of mastoid processes may be found, those consisting of compact bone, those

containing small cells, or those containing large cells, often with a still larger apical cell. Complications of suppurative otitis media depend on the type of the associated disease, the type of mastoid, the type of patient, and the type of infection. Acute otitis media may follow a common cold, a nasal sinus infection, influenza, or one of the specific fevers such as measles or scarlet fever. A streptococcus is the most dangerous infecting organism, and unfortunately it is very frequently present. In diagnosing mastoiditis it is not always possible to be guided by the temperature and pulse, since the febrile signs may be due to the pre-existing general condition.

Early Signs.—Tenderness over the mastoid must not be regarded as an important diagnostic sign of mastoiditis in the early stages; in acute otitis media slight tenderness in this region is more often present than not. Tenderness persisting or increasing or tenderness appearing late, from the seventh to the tenth day, are valuable signs however. With suppurative otitis media, pus is probably always present in the antrum, and if found in this cavity at operation the discovery does not mean that the operation was necessary. The drum should always be examined; in mastoiditis the appearance is on very rare occasions normal, though there is nearly always a history of earache which has cleared up. In early otitis media inflammation is first seen near the upper attachment of the drum, and this tends to spread over the whole surface of the membrane, which bulges and will usually perforate unless paracentesis is performed. A perforation high up near the periphery of the drum is more commonly associated with mastoiditis than a central perforation. Inflammation of the posterior superior meatal wall does not in itself indicate mastoiditis. Early paracentesis should always be performed and generally prevents the development of mastoiditis; it is much simpler and safer than a mastoid operation. Signs of severe mastoid infection are œdema, persistent tenderness over the process, and displacement of the pinna forward and downwards; pure forward displacement is more often associated with furunculosis. Direct pressure over the process produces pain in mastoiditis, while in furunculosis pain is felt when the pressure is so applied as to displace the pinna. Even cases of obvious mastoiditis are sometimes seen to recover when consent for the mastoid operation has been withheld. Occasionally an infected mastoid will perforate into the neck under the sternomastoid muscle; drainage must be secured at operation by thrusting a pair of sinus forceps beneath the muscle-fibres. In association with otitis media an abscess may sometimes occur in the cells at the root of the zygoma. This will give rise to a swelling under the temporal muscle causing tenderness and swelling in the region of the zygoma, and difficulty in opening the mouth; the cells should be opened up when the mastoid operation is performed.

Complications.—Extradural abscess may unexpectedly be found as a complication of mastoiditis and on opening the skull the dura may be covered with granulation tissue. If possible bone should be removed in every direction till healthy dura is exposed, Extradural abscess may simulate cerebral abscess or, if situated in the posterior cranial fossa, cerebellar abscess. With extradural abscess in the posterior fossa there is danger of involvement of the lateral sinus; the abscess tends to track along the sinus wall and eventually inflammation leading to septic thrombosis may arise in the vein itself.

Cerebral abscess may be very difficult to diagnose, especially if it is small and encapsulated and producing no localising symptoms; it is much more common as a complication of chronic suppurative otitis media. Headache when present may be localised or general, and is sometimes so slight that the patient scarcely complains. Symptoms may be ushered in by a rigor; very often when seen the patient presents no symptoms of brain abscess, but he may show signs of general ill-health, loss of appetite, and so forth, which might be produced by suppuration anywhere. Later he may develop a weakness of the facial muscles on the opposite side to the abscess, and some paresis affecting the opposite arm; true contralateral paralysis is extremely rare. Absence of the abdominal reflexes on the opposite side of the body and even a positive Babinski's sign may be found if the abscess is well developed, and a large pupil, due to compression of fibres going to form the third nerve, may be found on the same side as the abscess. The capacity for naming objects in a right-handed patient with an abscess on the left side is sometimes interfered with, although failure may not occur until a great many objects have been tried. General signs are mental lethargy, loss of sustained attention and memory, and sometimes a tendency to break off a conversation in the middle. The patient may suddenly fall asleep in his chair.

Where a cerebellar abscess is present the patient may show weakness in the limbs of the same side of the body. If he is asked to hold out his arms horizontally the hand on the same side as the abscess tends to sink; his sense of position may be affected, so that if he is asked to copy the position of one limb with the other, with his eyes shut, he finds it impossible to do so. If asked to walk in a straight line he deviates towards the side of the abscess, and on standing with his feet together and his eyes closed he falls towards that side, whatever the position of his head; this serves to distinguish the condition from labyrinthitis, in which the direction in which the patient falls is determined by the direction in which his head is turned. Nystagmus may be present with a cerebellar abscess and the patient often finds it difficult to sustain the position of his eyes when asked to look towards the side of the abscess. Headache may be severe and is often occipital, though it may extend forward to the frontal region.

Lateral sinus thrombosis is uncommon in acute otitis media and is much more likely to occur with chronic otitis media complicated by polypi and cholesteatoma. A rigor often occurs at the outset, associated with a sudden rise of temperature; the differential diagnosis is from typhoid, miliary tuberculosis, pneumonia, malaria, malignant endocarditis, and sometimes jaundice. About 75 per cent. of patients will recover if the operation is performed in time.

Meningitis is commoner as a complication of suppurative otitis media in children than in adults; it is localised in the early stage and prompt treatment may sometimes save the patient, but the spread is sometimes extremely rapid. Operative treatment in these rapid cases is not likely to save life. On lumbar puncture cerebro-spinal fluid escapes under pressure, and shows an increase of polymorphs and of protein, and a reduction of sugar and chlorides. If the foramen magnum is obstructed the fluid withdrawn on lumbar puncture may be normal.

PERINEAL TEARS.

(MR. CLIFFORD WHITE.)

PERINEAL tears are common accidents of labour but the frequency with which they are found depends on the care with which they are sought, the skill of the obstetrician conducting labour, and certain outside factors which will be mentioned later. A tear of the perineal skin is easily seen, but a tear of the vagina will pass unnoticed unless it is actively looked for. For this purpose a spring retractor which will separate the vaginal walls is very useful, and may also be employed when it is necessary to stitch up a tear of the posterior vaginal wall; a bayonet retractor is more convenient than a Sims speculum for the discovery of vaginal tears. The skill of the obstetrician plays a part in the avoidance of tears. At Queen Charlotte's Hospital I have noticed a tendency among students delivering normal cases to allow the head to extend before the suboccipiut is really under the pubis. The result is that the larger occipito-frontal diameter is delivered instead of the suboccipito-bregmatic, and the danger of laceration is increased.

Outside factors affecting the frequency with which tears are seen are to be found in faulty presentations. Antenatal care makes the correction of some of these possible, but a breech presentation with extended legs or arms in a primigravida inevitably results in laceration. In my opinion episiotomy is indicated in such cases. The direction of the cut should be half-way between the anus and the ischial tuberosity; hæmorrhage is seldom severe and can usually be controlled with a pair of Spencer Wells forceps. It is true that by using episiotomy one may make a cut larger than the laceration would have been, but against this must be set the readier healing of a clean cut, and the avoidance of a complete tear of the perineum. Bilateral episiotomy is rarely necessary.

In suturing the perineum thread and silk should not be used; they commonly lead to sepsis and failure to heal. Silkworm-gut is preferable and should be tied loosely—if anything, too loosely. Tight ligatures are liable to cut out on the development of reactionary œdema. Rubber tubing may be threaded over the gut to prevent the sutures cutting into the perineum. For the first few days a dry dressing is used, but if the tissues are swollen round the stitches on the second or third day hot fomentations wrung out in hypertonic saline will usually give relief. If the stitches cut out the patient may become feverish with a rapid pulse and symptoms of sepsis, in which case the general condition outweighs the hope of local repair; the stitches must be taken out and free drainage encouraged. In some cases, however, although the stitches become infected, the temperature and pulse remain normal and puerperal sepsis need not be considered; in these patients it is safe to leave in the stitches until the seventh day, giving morphia if necessary for pain. A certain amount of union will probably result and the rest of the laceration may heal by granulation. Where the stitches have to be removed we are confronted with a different problem. If we decide to do a flap-splitting operation, later, the patient must go about with a patulous vagina for some months, and there is the additional disadvantage that a subsequent labour will tear through the scar tissue; as a result we often postpone operation until further pregnancies are unlikely and the woman spends the best years of her life in a partially disabled condition. In any case a flap-splitting operation cannot be performed under 8 or 12 weeks from delivery, and the patient feels dissatisfied at being asked to submit to another anæsthetic so soon after returning to her usual routine. An attempt at secondary suture during the puerperium is therefore desirable whenever the condition of the patient warrants it. The laceration, after the original sutures have cut out, should be plugged with peroxide gauze until all sloughs disappear and then with lotio rubra, or some other simple dressing, until granulations begin to form. Operation cannot well be put off longer than the tenth or eleventh day. The patient is given a purge so that her bowels are well opened the day before the operation and she can be kept constipated for several days afterwards. She is anæsthetised, and all granulations and any squamous epithelium which has grown in from the vagina are scraped away with a sharp spoon. Silkworm-gut sutures, about half an inch apart, are passed through the tissues including the levator ani, and close apposition of the surfaces of the laceration is secured. The vaginal epithelium is brought together with a continuous catgut suture to prevent the formation of a gutter which might retain lochia. No douches are used, but the patient is placed in Fowler's position and an iodex pessary may be inserted to calm down any sepsis.

Where the tear of the perineum has been complete healing does not readily follow casual suture after labour; it is much better to leave the patient for 12 hours and approach her freshly next day. A few heal successfully upon primary suture, but it is worth while attempting secondary suture if the first stitches break down, since otherwise the unfortunate patient must spend some months with incontinence of fæces. A purge must be given 36 hours or more before operation, so that no fæces will be coming down while the repairs are being performed; an enema on the morning of the operation must be avoided for the same reason. As in the case of a partial tear, the laceration is treated previously with hydrogen peroxide and lotio rubra. At operation all granulations are scraped away with a sharp spoon and it is as well to make a small incision with a sharp knife at the apex of the tear to divide the vaginal epithelium from the rectal mucosa; if these two are not thoroughly separated it is difficult to get union. The rectal mucosa should be repaired first, and for this purpose I use the finest possible silkworm-gut, placing the sutures about a quarter of an inch apart; it is wise to tie each of these separately leaving long ends which will hang below the anus. The sphincter I repair with catgut, and it is worth while putting a continuous catgut suture down the whole length of the laceration in the rectal mucosa to make it water-tight. The vaginal epithelium is repaired with catgut, and the apex of the tear should be made especially firm, for this is the common site of recto-vaginal fistula. The sphincter should be reinforced by one suture in the perineal body.

Constipation should be maintained for six or seven days after the operation. Those who object to this plan can give small saline purges daily, but no attempt must be made to combine the two methods. If the patient is kept constipated until the fourth day and then given a purge the large resultant motion will break down the stitches. An enema any time during the first week is equally dangerous. Irrigation of the vagina through a soft rubber catheter cannot do any harm, and I believe iodex pessaries are of some use. The stitches can be removed after about a week, but an extra day or two is valuable if the patient's condition is good. An anæsthetic is necessary for removal of the sutures, which must be performed slowly and carefully.

CORRESPONDENCE

DIPHTHERIA BACILLI.

To the Editor of THE LANCET.

SIR,—Dr. Chesney's letter calls for some statement from my colleagues and myself on the points which he raises. The bearing of the existence of two distinct types of diphtheria bacillus on the value of antitoxin and of prophylactic immunisation with toxoid obtained from Park-Williams-8 strains is not yet clear; in our original publication we purposely refrained from discussing it. In view, however, of your correspondent's queries, it may be well to state briefly the possible significance of our observations.

The chief difference between the strain which we have designated *gravis* and bacteria like Park 8, which we find to have cultural characters intermediate between those of *gravis* and *mitis*, is that 24-hour cultures of Park 8 do not readily kill experimental animals unless administered in considerable amounts; whereas the *gravis* strains, or at all events many of them, kill the experimental animal when quite small amounts of 24-hour cultures are inoculated. That is to say, *gravis* strains are highly virulent, Park 8 is not. When however we turn to toxin production in cultures, it is found difficult to obtain potent toxin from *gravis* strains. There is here an obvious difficulty in determining experimentally whether Park 8 antitoxin is entirely appropriate to *gravis* toxin. It is hoped that this difficulty will be overcome by alterations in method of toxin production, and investigations with this purpose are in progress

It can be said definitely, however, that considerable doses of commercial antitoxin, used as prophylactic, protect guinea-pigs from subsequent injection of lethal doses of *gravis* strains. It would therefore seem probable that there is sufficient antigenic similarity between the different varieties of diphtheria bacillus to make it likely that the prophylactic administration of Park 8 toxoid will protect against infections by *B. diphtheriæ gravis*. The failure of large doses of antidiphtheritic serum to control grave cases of diphtheria, which has been reported recently from so many different quarters by observers whose competence cannot be seriously doubted, must mean either (1) that the bacilli of *gravis* type, which in our experience, at Leeds, have been responsible for all such cases, produce so much toxin in the tissues that adequate dosage of serum is not administered; or (2) that they produce a type of toxin to which the Park 8 antitoxin is badly adapted, although capable of neutralising it if present in excess. It is possible that the antitoxin treatment of diphtheria has partly miscarried, because it has been assumed too readily that the toxic elements in filtrates of cultures which most affect the guinea-pig are also those most dangerous to man.

We hope to be able presently to form an opinion as to the explanation of the discrepancy between laboratory results and much of the recent clinical experience with diphtheria antitoxin. Progress in this work has till now proved difficult.

I am, Sir, yours faithfully,

JAMES WALTER MCLEOD.

The School of Medicine, Leeds, Bacteriology Department, Oct. 19th, 1931.

MECHANISM OF PULMONARY COLLAPSE.

To the Editor of THE LANCET.

SIR,—Absence from town and the commencement of the session prevented an earlier reply to the criticisms of Dr. Barclay and Dr. Stanley Melville and to the question of Dr. Blyth Brooke in your issues of Sept. 12th and 19th. I think that neither of the first two has grasped the important point that natural breathing is entirely different from forced inspirations and expirations. The latter do not occur under normal circumstances. My work has all been done as far as possible with the view of excluding conscious respiration and reproducing the natural conditions of the patient. Therefore their criticisms have little bearing on the subject of collapse as occurring in the patient in bed, and, further, the important point is not the degree of excursion but the level of the diaphragm.

I can assure Dr. Barclay that, with quiet unconscious breathing, the diaphragm does assume a higher level in the supine or reclining position than in the erect. Although a voluntary forced diaphragmatic inspiration induced in a patient breathing quietly will cause the diaphragm to descend to approximately the same level both when standing or lying, yet the descent in the supine posture will be greater than that in the erect posture, demonstrating that the level of the diaphragm is more elevated when supine. The elevation is more marked in those whose chests tend towards the type of the emphysematous, and least marked in those whose tendency is to visceroptosis. I agree with his remarks as to indicators attached to the skin. The criticism does not apply when the base of the indicator is taken at the lower level of the costal margin.

Dr. Melville's second objection referring to the transillumination on the affected side after phrenic evulsion is also the result of observations in forced inspirations, which I must reiterate are totally abnormal. When he remarks that "the theory of temporary blocking of a bronchus, with which we are all familiar, must take pride of place," I would reply that, although obstruction by a foreign body to a bronchus may cause deflation, in the cases which I have investigated no such block has been found at autopsy, and in life the usual associated symptoms have been absent. It is impossible to do more than demonstrate this in the post-mortem room, and to show clinically how rapidly the signs of deflation can disappear without any other demonstrable evidence of the unblocking. Blocking of a bronchus cannot explain the varying distribution and degrees of deflation.

Dr. Blyth Brooke asks me for an explanation of the physical signs accompanying the massive collapse attack, associated with pyrexia indicating infection, which I hold to be the result of the onset of pleurisy. The explanation of these signs has always been a stumbling block. I would put it as follows:—

The patient, lying in bed after operation with respiratory changes at a minimum, has both lower lobes deflated. The lower intercostals and abdominal muscles are lax, the diaphragm high on both sides. The onset of pleurisy produces (as in other cases) elevation and fixation of the corresponding half of the chest in the upper part by the scalenes and upper intercostals, fixation of the lower chest by the lower intercostals, lateral abdominal muscles, and sometimes the transversalis and triangularis. The diaphragm remains high and inactive on the affected side. At this moment the patient, to carry on respiratory changes,

is left with the upper lobe of the opposite side. This is sufficient to account for the dyspnœa and cyanosis. The next stage is to bring into action the lower lobe on the unaffected side. This involves a change from inactivity at a high level to activity in a lower plane by the underlying half of the diaphragm and, I think, accounts for a considerable amount of the distress. When the respiratory muscles on the unaffected side have come into action, the affected side remaining inactive, the lung on the sound side becomes over distended and will tend as far as possible to displace the mediastinum to the opposite side. The superficial cardiac dulness on the affected side is increased by retraction of lung, but on the unaffected side is diminished by over inflation. The condition is different from that which occurs in pneumonia, where at the commencement of pleurisy the affected lobe is not deflated, and there is no violent change in the muscular mechanism. The individual has not been in the quiescent condition of the post-operative patient.

I hope I have now made clear the essential point that in the post-operative cases of deflation the important factor to realise is that respiratory changes are at a minimum, and there is accordingly no analogy with the movements which occur in forced respiration, or when the subject is standing on his head. Accordingly the radiologist's slogan "take a deep breath" must be interdicted.

I am, Sir, yours faithfully,

CHARLTON BRISCOE.

Harley-street, W., Oct. 14th, 1931.

ENLARGEMENT OF THE PROSTATE.

To the Editor of THE LANCET.

SIR,—Mr. William Robinson rightly calls attention to the fact that the view advanced by me in my Hunterian lecture of 1922 that enlargement of the prostate is a form of fibro-epithelial degeneration analogous to that found in the female breast at the menopause was the same as that held previously by Mr. F. T. Paul and published in 1910. In the correspondence in your columns that followed my lecture I paid tribute to Mr. Paul and explained my apparent lack of courtesy in not referring to his work by stating that although I had made an exhaustive study of literature before preparing my lecture I had not come across Mr. Paul's writings on the subject. The fact that my conclusions and supporting arguments were so precisely similar to those previously advanced by Mr. Paul, and that these conclusions and arguments had been reached independently by two workers who had never met or read each other's writings, in my opinion adds greatly to their value. My object in writing this letter is to correct the impression that I, in any way, lay claim to having originated the theory of fibro-epithelial degeneration. It is an idea that has occurred to more than one mind and all that I did in my Hunterian lecture of 1922 was to bring forward in its support all the evidence that I could collect.

I am, Sir, yours faithfully,

KENNETH WALKER.

Harley-street, W., Oct. 15th, 1931.

SHOULD HIGH BLOOD PRESSURE BE REDUCED?

To the Editor of THE LANCET.

SIR,—The paper thus entitled by Dr. I. Harris and Dr. C. L. G. Pratt in your issue of Sept. 19th (p. 629), is of great interest and importance. In their series of 22 cases of high blood pressure put upon a standard diet, the intramuscular administration daily of 3 c.cm. of collosol sulphur (Crookes) was followed by a considerable lowering of the average systolic pressure. (They mention that in some of the cases they used erythrol-tetranitrate instead of the sulphur, but do not state the dosage.) The patients were watched for the first week without any medication, were given the sulphur daily in the second, and were again studied in the third after the drug had been discontinued. During the second week, when the sulphur was being given, the average pressure was 19 mm. Hg lower than during the first. In this second week the average non-protein nitrogen (N.P.N.) rose from 37·4 to 43 mg. per cent. and the sodium chloride, phosphates, and blood-urea all increased, while the alkaline reserve fell. All this with a decreased output of urine.

The writers argue from the above (fallaciously to my mind) that "it is not desirable to administer pressure-reducing drugs as routine treatment in cases of hypertension." At first sight this might seem reasonable, but a study of the cases in the third week when no drugs were being given shows that although the average pressure was still about the same as during the week of administration—160 as compared to 158 (no doubt the sulphur was still acting), the average N.P.N. had fallen to 39·3, which is nearly as low as it was before the sulphur was given (37·4) when the average pressure was 177. Surely one may assume that the rise in the N.P.N. and other substances in the blood was due, not to a lowered blood pressure directly, but to a decreased efficiency of the kidneys from damage by the sulphur. It does not at all follow that, because there was an accumulation of undesirable materials in the blood following the use of sulphur, there would be the same retention from every other drug that happened to lower the blood pressure.

As regards the general question of whether or no high blood pressure should be interfered with, a great deal depends upon the nature of the individual case. Drs. Harris and Pratt do not state the probable cause of the rise in pressure in their cases. Were they cases of nervous, toxic, or organic origin? They only criticise the use of drugs for the lowering of the pressure, and probably would agree that every case should be attended to as regards rest (physical and especially mental), diet, and elimination. They might also think that in urgent cases a timely venesection may avert catastrophe—and with this I would heartily agree. But if in a given case all such measures have been tried and yet the pressure remain too high, especially if there be symptoms present, such as headache or dizziness, then the question arises whether or not the pressure should be reduced within safer limits by the use of drugs. In my opinion such therapy is sound and should be used tentatively; if the patient feel better as a result, which is usually the case, then we are taking a strain off the circulatory apparatus which may at any time precipitate a cerebral hæmorrhage or acute heart failure. If the patient does not feel so well—and many require the high pressure to compensate for some abnormality—then it is the optimum pressure for him and should not be again interfered with.

I have not used collosol sulphur (Crookes) for the lowering of blood pressure, but can vouch for the value of sodium sulphocyanate in this respect. If it be used in doses not exceeding 15 g. daily—and half this amount is usually sufficient—the pressure can generally be lowered considerably and this without any untoward effects except, in extremely rare instances, a dermatitis. Some prefer the potassium salt. It remains to be seen whether the blood chemistry be adversely affected along with the lowering of pressure

by this means (and we are at present studying this point in the department of therapeutics in the University of Toronto), but even if it be so it seems to me that we are justified in trying, and even should try, some such medicinal remedy when the pressure is too high and does not yield to environmental, dietetic, and other measures.

I may summarise these remarks as follows :—

1. Collosol sulphur while lowering the blood pressure produces certain adverse changes in the chemistry of the blood and apparently lessens the efficiency of the heart muscle, but it by no means follows that these effects are due to the lowered pressure. They probably arise from damage to the kidneys.

2. In cases of hyperpiesis, when the environment, diet, &c., have been regulated and still the pressure remains too high, it is good therapy to attempt to lower it, always watching the effect on the well-being of the patient. In my experience sodium sulphocyanate is a satisfactory drug for this purpose.

I am, Sir, yours faithfully,

Toronto, Oct. 6th, 1931. R. D. RUDOLF.

THE NATURE OF VIRUSES.

To the Editor of THE LANCET.

SIR,—In your leading article (Oct. 3rd, p. 751) on Dr. Dale's address to the Physiological Section of the British Association appear two or three statements which seem to me misleading. The arguments drawn from them as to the living or organismal nature of such viruses do not therefore really support this conclusion. In the first place, as regards the comparison with a gene ; a gene may be associated with the transmission of a particular character, or set of characters, but it cannot exist alone, still less can it reproduce, of itself, the entire cell-organism. It takes a host of genes to do this. And the minute, probably actually ultra-microscopic particles which represent, or indicate the virus (in the case of the filtrable ones), would have to include, if they were alive, the entire potentialities of a living organism. Now a molecule of hæmoglobin, one of the largest definitely known, is very far from being a molecule of living protoplasm—and some of these virus particles are said to be smaller than this.

With regard to the autogenous origin of viruses, which Dr. Dale apparently thinks is regarded as one of their characters by those who consider them to be enzymes (by autogenous I take it he means the capacity of a cell to produce one of these abnormal or pathogenic principles spontaneously), I do not know that anyone has claimed this as a constant character of all viruses. At times, apparently, a bacteriolysin does arise in such a spontaneous manner. My own view [1] is that, if these viruses are the product of abnormal cell-metabolism, such an autogenous origin cannot be ruled out as an impossibility. I think myself that the Rickettsia bodies of typhus fever and other similar bodies may be developed spontaneously in the louse or tick, under certain conditions upsetting the digestion. Others, however, perhaps most, having once originated in some such manner, may now be maintained by the affected cells—i.e., redeveloped by them only in response to the irritant stimulus of the same virus, with which the organism has become "infected." Dr. Dale may, as you say, have little sympathy with this view, but it is a sine qua non of the enzyme theory, and I believe that most bacteriologists who hold the bacteriolysin view of the bacteriophage accept it, even if faute de mieux. Cases of this kind would of course behave, in regard to their manifestation, like bacterial infections.

I should not myself regard a spontaneous origin of rabies as out of the question, under certain circumstances. I remember, when I was in Palestine, there was an idea that the wolf was the "latent" source of the virus, and that dogs were bitten by them and in turn caused human cases. I regard this disease as a definite example of abnormal hæmetaboly and one cannot say what effect on cell-metabolism extreme environmental changes, such as temperature or fasting, may have.

I am, Sir, yours faithfully,

Oct. 4th, 1931. H. M. WOODCOCK.

[1] See THE LANCET, 1930, i., 211.

DR. PAUL WHITE ON "HEART DISEASE."

To the Editor of THE LANCET.

SIR,—There are several statements in the review of my book (Sept. 5th, p. 537) that should be challenged.

In the first place, there is the criticism that the book goes into too great detail with a resulting lack of perspective and that the arrangement is too systematic. These characteristics of the book are considered as faults rather typical of American medicine but rather they may more justly be considered to expose faults in much of the English medical literature of the past, that is, a lack of system and too little attention to essential details. Many times apparently well written essays in medicine have been hopelessly inadequate for study and reference because of their omissions in these respects. Comprehensiveness is essential in the kind of book that I have written and I have realised the need of at least making mention of facts even though they are relatively unimportant. My attempt to allot space reasonably to the various topics is indicated by comparing the subject matter in the book on angina pectoris and on gout, two subjects which have been cited by the reviewer himself. Certainly angina pectoris is so much more important than gout in its relationship to cardiovascular disease that it deserves 20 pages as contrasted to two lines and yet in the whole field of cardiovascular disease much more space cannot rightly be allotted even to angina pectoris in one volume. Expansion of the work into two or three volumes would at once defeat its purpose, namely, that of supplying within reasonable compass for the medical student and practitioner a survey of the field of heart disease. If I had spent more time on the subject of gout I might well have been accused of emphasising unduly an unimportant point with lack of perspective. Incidentally the chapter on Cardiovascular Roentgenology which pleased the reviewer has not a bit less detail in it than any other part of the book.

The reviewer states that I referred on page 127 to the disappearance of the Korotkow sounds as the diastolic end-point. My actual statement was as follows :

"The diastolic pressure is usually recorded at that point at which, during decompression, the sounds and murmurs cease. Certain qualifications must here be added."

A pertinent qualification appears on page 128, second paragraph, and reads as follows :

"In the case of the determination of the diastolic pressure by the auscultatory method one further source of difficulty

and error exists. In the case of marked aortic regurgitation or peripheral vasodilatation it is frequently possible to hear a distinct sound, coincident with the pulse, on auscultation over the brachial artery below the blood pressure cuff during decompression, even down to zero pressure. This sound is related in the same cases of marked aortic regurgitation or vasodilatation to the arterial pistol shot sound found on auscultation over the great arteries when slightly or moderately compressed with the stethoscope. The fullness of pulse that occurs in such cases produces the sound of a shock and vibration (the water hammer effect) by suddenly striking the fluid column ahead of it and distending the walls of the blood-vessel which is relatively, but not absolutely, empty and collapsed at the end of diastole. It does not indicate that the diastolic pressure is zero. The true diastolic pressure, often very difficult to measure in these patients, is that pressure level at which the sharp arterial sound abruptly gives way to a much duller sound, which continues to be heard usually down to zero pressure. The diastolic pressure is always low in such cases, from 20 to 50 millimetres of mercury. The oscillometric method helps especially to check the auscultatory method in establishing the true diastolic pressure under these conditions."

The reviewer suggests that I have adhered too much to the older classification and have been lured back from time to time to the camp of the anatomical die-hards. I have distinctly stated that I believe neither in the old point of view nor in the recent so-called modern point of view which is now passing, the first over-emphasising pathology and the second neglecting pathology. Most assuredly valvular defects are a strain on the circulation even though everyone will admit of course that abnormal rhythms such as auricular fibrillation are also of great importance. My insistence through the book has been that we should pay attention to all three phases of the diagnosis of cardiovascular disease and not neglect any one phase. The three phases forming the tripod of cardiovascular diagnosis are ætiology, structural defects, and disorders of function.

It seems to me very unlikely that the reviewer represents adequately the modern school of cardiovascular students and practitioners in England, nor do I believe that there is such a gulf between American and English physicians that it cannot be bridged occasionally by a book that may be helpful on both sides of the sea.

I am, Sir, yours faithfully,

PAUL D. WHITE.

Massachusetts General Hospital, Boston, Mass.,
Oct. 9th, 1931.

*** We are happy to publish Dr. White's comments on our review of his valuable book, but would point out that nowhere in it is there a suggestion that an exposition of American views would not be valuable to British medicine. Indeed, the reverse is suggested. —ED. L.

MOTIVES AND MECHANISMS OF THE MIND.

To the Editor of THE LANCET.

SIR,—Having lately been on holiday I have not been able until now to send you some comments which have been in my mind on the first volume of your post-graduate series, "Motives and Mechanisms of the Mind."

You will forgive me I hope for writing at some length, for the book interests me as another stepping-stone upon which psychology is entering the paths of general medicine. Such a book helps us to try at least to understand our neurotic patients, and it is not simplified as so many books are to the point of stupid simplicity, but presupposes some intelligence in the reader.

We have hitherto been left in the dark about many of the motives of mind which are made clear in this book. For instance, we have been told by psychologists that the patient wants to be ill, and if we ask why, we have been led into a dim wood of sexual symbolism and there abandoned. Dr. Howe makes the matter plain by saying that the patient does not want his illness as such, he wants it as means to an end. He wants Love, Protection, and Power, and that we can understand. We are helped also in the chapter on sexual contrasts, when we are shown something of the minds of the man who is not altogether masculine and the woman who is not altogether feminine, and although we may feel that Dr. Howe has limited himself in making his description of "emotional development" almost entirely a description of the development of sexual emotion, his tracing of different stages is valuable and clarifying. He gives us something to get hold of too in his pages on dreams and on alcoholism. I will quote, if I may, one sentence which is illuminating on the motives which may lie behind some of those extraordinarily odd and unwise marriages which seem to produce almost all the difficulties of many of our patients. The words are (p. 160): "Difficulties in marriage are often due to the unerring choice of unconscious motives, neurosis seeking and finding complementary neurosis in a way that conscious reason may find to be intolerable." So, he says, the girl who has been repressed by a stern father may marry an invalid of whom she is not afraid, and the man with sexual repression may marry a blue-stocking.

I have given you evidence, I hope, that I find "Motives and Mechanisms of the Mind" worth reading, but I should like to add that it is not always easy reading. There are no references to literature in which more information might be found and hardly any explanation of the psycho-analytical processes by which, presumably, the author has arrived at this or that conclusion, so that many of the statements and opinions put forward seem dogmatic. It is a mere chance that I feel it safe to assume, for instance, that the interpretations of the four square gospel of obsession on page 30 were not far-fetched snap judgments but were the result of many hours of slow and laborious study of the patient. I make the assumption because I happen to know that that is the sort of way in which psychotherapists do work, but I think it would be a help to Dr. Howe's readers if something of the sort were explained to them. Moreover, I find him illogical sometimes, as when the only case quoted in a page or two on purposive illness is one of genuine optic neuritis (p. 25). It is obvious from the context that Dr. Howe is not Adlerian enough to ascribe a real optic neuritis to a wish to be blind; indeed, he says that the case shows the difficulties of diagnosis. But it is puzzling to find it where it is, just as it is puzzling to find as a case in which the cause of the symptoms is "primarily organic" the story of a man who suffered no physical injury from a minor accident which initiated his illness (p. 15).

It is not without a purpose that I write of these difficulties, for I want to suggest a way of using the book which will prevent the inquiring reader from being deterred by the superficial obstructions. He should, I think, take it as a text-book, and read a chapter at a time, without seeking to find in the book itself the justification for what he reads. If the physician will then set himself to watch and listen without interference or comment to such deeds and words of his friends and patients as have a bearing upon the subject matter of the chapter he has just

read, I believe he will very greatly enrich his power of understanding and helping his patients. In other words, if he will take "Motives and Mechanisms of the Mind" as it stands and forthwith *use* it in his work, I feel sure that the practitioner will be greatly helped by it, and in the process I think he will come to see the meaning of what he has read in so far as that stands in need of amplification. If after that he wants to criticise or contradict, he will at least have clinical ground upon which to stand.

I am, Sir, yours faithfully,

Oct. 19th, 1931. PSYCHOLOGIST.

MEDICAL GRADUATES FOR PARLIAMENT.

SEVENTEEN members of the late House of Commons held a medical qualification. Two have been re-elected without opposition.

Name.	Constituency.	Party.
Prof. T. Sinclair	Queen's University, Belfast	C.
Dr. J. H. Morris-Jones	Denbigh (Denbigh)	Nat. L.

Twelve others are standing for re-election along with 10 new candidates most of whom have contested Parliamentary seats before. In the following list those who sat in the last Parliament are indicated by a dagger sign, those who have sat in any previous Parliament by a double dagger, and those who have stood before without success by an asterisk.

LONDON BOROUGHS.

Candidate.	Constituency.	Party
†Dr. Alfred Salter	Bermondsey (West)	Lab.
‡Dr. C. R. Cooke-Taylor	Camberwell (Dulwich)	L.
*Dr. J. Douglas Cooke	Hammersmith (South)	C.
Miss Esther Rickards	Paddington (North)	Lab.
Dr. W. J. O'Donovan	Stepney (Mile End)	C.
‡Sir Henry Jackson	Wandsworth (Central)	C.

ENGLISH BOROUGHS.

*Dr. J. W. Leech	Newcastle-on-Tyne (West)	C.
†Mr. Somerville Hastings	Reading	Lab.
*Dr. A. B. Howitt	Reading	C.
*Dr. G. B. Hillman	Wakefield	C.

ENGLISH COUNTIES.

‡Dr. L. Haden Guest	Bucks (Wycombe)	Lab.
*Dr. R. A. Lyster	Hants (Winchester)	Lab.
†Dr. F. E. Fremantle	Herts (St. Albans)	C.
†Mr. H. C. Haslam	Lincolnshire (Horncastle)	C.
*Dr. F. G. Bushnell	Somerset (Taunton)	Lab.
†Rt. Hon. C. Addison	Wilts (Swindon)	Lab.

WELSH COUNTIES.

†Dr. J. H. Williams	Carmarthen (Llanelly)	Lab.

SCOTTISH BURGHS.

†Dr. Drummond Shiels	Edinburgh (East)	Lab.
†Dr. Walter E. Elliot	Glasgow (Kelvingrove)	C.

SCOTTISH COUNTIES.

†Dr. J. Hunter	Dumfriesshire	L.
†Dr. R. Forgan	Renfrew (West)	N.P.

UNIVERSITIES.

†Sir Ernest Graham-Little	London University	Ind.

C. = Conservative. L. = Liberal. Nat. L. = National Liberal. Lab. = Labour. Ind. = Independent. N.P. = New Party.

Brief Personal Notes.

Rt. Hon. Christopher Addison, M.D. Lond., F.R.C.S. Eng., Minister of Agriculture in the late Government, was at one time professor of anatomy at University College, Sheffield, and Hunterian professor at the Royal College of Surgeons.

F. G. Bushnell, M.D. Lond., D.P.H., who has previously contested London University and the Moseley division of Birmingham, qualified in 1890, and has held public health appointments in Essex and Plymouth.

J. Douglas Cooke, M.B. Melb., F.R.C.S. Eng., qualified in Australia and was resident at the London Hospital. He practised for 20 years at Stanmore, and contested Peckham at the last election.

C. R. Cooke-Taylor, M.R.C.S., D.P.M., is a barrister-at-law who took his medical diploma in 1927. He is visiting physician to the British Hospital for Nervous and Mental Disorders, and psychologist to the Ex-Service Welfare Society. This is the fifth time he has contested the seat, and the seventh time he has stood for Parliament.

Walter E. Elliot, *M.C.*, M.B. Glasg., was Parliamentary Under-Secretary of State for Scotland in a previous administration, and until he held office acted as honorary secretary to the Parliamentary medical committee.

F. E. Fremantle, O.B.E., M.D. Oxf., F.R.C.S. Eng., F.R.C.P. Lond., has sat in five Parliaments as Member for the St. Alban's division, and has been chairman of the Parliamentary medical committee. He was for 15 years county medical officer of health for Herts, and is a justice of the peace.

Robert Forgan, *M.C.*, M.D. Aberd., D.P.H., who qualified in 1915, is executive venereal diseases officer of the Lanarkshire Joint Committee.

Sir Ernest Graham-Little, B.A., Univ. Cape of Good Hope, M.D., F.R.C.P. Lond., is in charge of the skin department at St. Mary's Hospital, London. He has been a member of the University Senate since 1905, and is now chairman of the External Council, as well as a member of the Academic Council and of the Finance Committee of the University.

L. Haden Guest, *M.C.*, M.R.C.S., has sat in Parliament as Member for Southwark (North). He has been school medical officer, consulting physician to St. George's school clinic, Blackfriars, and a member of the London County Council.

Henry C. Haslam, M.A., M.B., D.Sc. Camb., qualified in 1897, and is a biochemist attached to the Cambridge Pathological Laboratory.

Somerville Hastings, M.S. Lond., F.R.C.S. Eng., who has sat for Reading in two previous sessions, is surgeon in charge of the ear and throat department of the Middlesex Hospital. He looks upon the health, contentment, ability, and skill of the people as the greatest national asset.

G. B. Hillman, M.B.E., L.M.S.S.A., who is chairman of the West Riding local medical and panel committee, stood without success for the Normanton division in 1923. He is a justice of the peace, has been Mayor of Wakefield, and is now chairman of the general purposes committee.

A. B. Howitt, C.V.O., M.B. Camb., was Epsom scholar at St. Thomas's Hospital, qualifying in 1906, and holding a number of hospital appointments, including that of resident medical officer at St. Thomas's Home. He is son-in-law to Lord Marchamley, and stood previously for Preston, Lancs.

A. Joseph G. Hunter, *M.C.*, M.D., F.R.C.S. Edin., is assistant surgeon to the Dumfries and Galloway

Royal Infirmary, and medical officer to the Dumfries prison.

Sir Henry Jackson, M.A. Camb., B.Sc. Lond., M.B. Edin., who is in general practice on Putney Hill, was Mayor of Wandsworth from 1921–24. He is treasurer of the Bolingbroke Hospital, and six months ago became vice-chairman of the London voluntary hospitals central committee.

J. W. Leech, M.S. Durh., F.R.C.S. Edin., is surgeon to the Royal Victoria Infirmary at Newcastle-on-Tyne, lecturer in clinical surgery and examiner in the University of Durham. He is president of the University Medical Graduates Association, and has written on medical ethics.

R. A. Lyster, M.D., B.Sc. Birm., who has contested the same division before, was county medical officer for Hampshire, and is now lecturer on public health and medical jurisprudence at St. Bartholomew's Hospital. He has been president of the Society of Medical Officers of Health.

W. J. O'Donovan, O.B.E., M.D. Lond., is physician to the dermatological department and lecturer on dermatology at the London Hospital, which is in the centre of his constituency. He was, he says, compelled to step into the local political arena when the electric light was turned off at the hospital during a strike.

Esther Rickards, M.S. Lond., F.R.C.S. Eng., qualified from St. Mary's Hospital in 1920, and is maternal clinician to Tottenham Urban District and assistant medical officer to Finsbury Borough Council. She is an alderman of the London County Council, and a member of its public health and housing committees.

Alfred Salter, M.D. Lond., D.P.H., was elected to the House of Commons for the same constituency in 1923, and again in 1925 and 1929. He was chairman of the medical committee during the last Parliament. He is a J.P. for the County of London, and alderman of the Bermondsey Borough Council. He retired from general practice in Bermondsey two years ago.

T. Drummond Shiels, *M.C.*, M.B. Edin., has represented Edinburgh (East) since 1924, the year in which he qualified. He has been hon. secretary of the Parliamentary medical committee.

J. H. Williams, L.S.A., is a member of the Middle Temple, a justice of the peace, and chairman of the public health committee for the county of Carmarthen.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Lt.-Comdr. J. A. Cusack to *Shoreham*. Surg. Lts. T. L. J. Barry to *St. Vincent*; J. G. Paley to *Dorsetshire*; and F. Dolan to *Hood*.

ROYAL ARMY MEDICAL CORPS.

Maj. E. C. Lambkin retires on retd. pay and is granted the rank of Lt.-Col.

Lt. (on prob.) I. H. C. Morton, from the secd. list is restd. to the estabt.

A. P. Trimble to be Lt. (on prob.) and is secd. for Pay and Promotion.

ARMY RESERVE OF OFFICERS.

Lt.-Col. E. C. Lambkin (Maj., retd. pay) to be Lt.-Col.

Lt.-Col. W. L. Baker, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Capt. R. J. S. McDowall, from Supp. Res. of Off., to be Capt.

Capt. J. B. Cargin, late Capt., R.A.M.C. (temp. commn.), to be Capt.

COLONIAL SERVICE.

The following Medical Officers have been appointed: Dr. C. E. Riddell, Jamaica; Dr. J. M. Shapiro, Palestine; and Dr. J. M. Stockhausen, Dr. T. Wilson, and Dr. F. C. Wright, Jamaica. The following promotions and transfers are also announced: Dr. G. L. Alexander, Medical Officer Sierra Leone, to be M.O., Gold Coast; Dr. J. M. Coutts, Dental Surgeon, Falkland Islands, to be Dental Officer, Straits Settlements; and Dr. W. Wijegoonewardene, Medical Officer, Grade I., to be Medical Superintendent, Kandy Hospital, Ceylon.

LONDON MEDICAL SOCIETIES.

SESSION 1931–32.

AT the opening of a new session we are again giving for the convenience of our readers the names of President and hon. secretaries, with the address at which they can be approached.

Royal Society of Medicine:—President: Dr. T. Watts Eden; Hon. Secretaries: Dr. George Riddoch and Mr. C. W. G. Bryan, F.R.C.S. Address: 1, Wimpole-street, W. 1.

Royal Society of Tropical Medicine and Hygiene:—President: Dr. G. Carmichael Low; Hon. Secretaries: Dr. C. M. Wenyon and Dr. N. Hamilton Fairley. Address: Manson House, 26, Portland-place, W. 1.

Medical Society of London:—President: Mr. Herbert Tilley, F.R.C.S.; Hon. Secretaries: Mr. W. E. Tanner, M.S., and Dr. T. Jenner Hoskin. Address: 11, Chandos-street, W. 1.

Hunterian Society:—President. Dr. David Ross; Hon. Secretaries: Dr. D. C. Norris, Mr. Andrew McAllister, F.R.C.S. Address: 14, City-road, E.C. 1.

Harveian Society:—President: Sir Thomas Horder; Hon. Secretaries: Mr. C. P. G. Wakeley, F.R.C.S., and Dr. R. Cove-Smith. Address: 24, Queen Anne-street, W. 1.

Medico-Legal Society:—President: Lord Riddell; Hon. Secretaries: Mr. Ernest Goddard, Sir Bernard Spilsbury. Address: 3, South-square, Gray's Inn, W.C. 1.

London Association of the Medical Women's Federation:—President: Dr. Letitia Fairfield; Hon. Secretary: Dr. Annis C. Gillie. Address: 86, Porchester-terrace, W. 2.

West London Medico-Chirurgical Society:—President: Dr. H. H. Mills; Hon. Secretaries: Mr. C. Hamblen Thomas, F.R.C.S., and Dr. W. S. C. Copeman. Address: 15, Harley-street, W. 1.

Chelsea Clinical Society:—President: Dr. H. Rivers Pollock; Hon. Secretaries: Mr. A. Rugg-Gunn, F.R.C.S., Mr. H. P. Baylis, L.D.S. Address: 49, Harley-street, W. 1.

London Clinical Society:—President: Dr. Edward A. Gregg; Hon. Secretary: Dr. Philip Figdor. Address: 23, Harley-street, W. 1.

West Kent Medico-Chirurgical Society:—President: Dr. Beatrice F. Lovibond; Hon. Secretary: Dr. C. J. B. Buchan. Address: 267, Baring-road, S.E. 12.

Royal Medico-Psychological Association:—President Dr. R. R. Seeper; Hon. Secretary: Dr. R. Worth. Address: Springfield Mental Hospital, S.W. 17.

Society of Medical Officers of Health:—President: Dr. C. Killick Millard; Exec. Secretary: Mr. G. L. C. Elliston. Address: 1, Upper Montague-street, W.C. 1.

Tuberculosis Association:—President: Prof. S. Lyle Cummins; Hon. Secretary: Dr. G. T. Hebert. Address: St. Thomas's Hospital, S.E. 1.

PRINCE ALFRED HOSPITAL, SYDNEY.—The board of directors, finding it impossible to meet expenditure, have closed 200 beds, which leaves 330 in occupation. It is estimated that the expenditure will thus be brought to between £800 and £1000 per month below income. By the sale of securities indebtedness has been reduced by £4000.

MEDICAL NEWS

Royal College of Surgeons of England.

A quarterly meeting of the Council was held on Oct. 15th, with Lord Moynihan, the president, in the chair. Sir Percy Sargent and Mr. Wilfred Trotter, F.R.S., were re-elected members of the executive committee of the Imperial Cancer Research Fund. Mr. R. Y. Stevenson, of the Herbert Strutt School, Belper, was admitted as the second Macloghlin scholar.

Diplomas of membership were granted to P. S. Bassalvi (Punjab and Middlesex), H. N. Gregg (Birmingham), G. S. Malik (University College Hospital), Sosa Matthew (Punjab and Royal Free), A. Shafi (Punjab and Charing Cross), and G. Steane (Birmingham).

It was reported that 10 out of 20 candidates had been successful at the primary examination for the Fellowship which was held at Melbourne, Australia, in August.

The annual meeting of Fellows and Members of the College will be held at 3 P.M. on Thursday, Nov. 19th.

University of London.

At recent examinations the following candidates were successful :—

D.P.H.

Katherine Barnett, R. E. Barrett, H. L. W. Beach, Sarah Boyle, Edgar Cochrane, May P. Cowell, H. A. Crouch, N. J. England, D. W. G. Faris, Marguerite M. Fenn, H. S. Gear, J. E. Howard, I. J. Jones, G. C. Kelly, T. C. Lonie, Hazel Machado, G. R. Marcano, Hilta I. C. Pfister, S. M. Rafi, Dorothy M. Rees, Florence M. Rhodes, J. H. N. Roe, A. P. Ross, B. M. Roy, C. R. Selous-Jones, S. P. Srivastava, A. T. Till, Sarah M. F. Walmsley, and W. J. Webster.

Scottish Conjoint Board.

As a result of recent examinations of the Conjoint Examining Board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates have been granted the Diploma of L.R.C.P. and L.R.C.S. Edin., L.R.F.P. & S. Glasg. :—

Odette Rosset, J. A. Rosset, Cyril Hoole, O. E. R. Abhayaratne, W. E. MacDougall, J. I. Meikle, R. F. Hudecsek, W. B. Taylor, D. K. Cowan, J. G. Thomson, Frederick Ludorf, S. E. Paterson, A. V. Pieris, L. J. Scott, A. A. McNish, Jacob Janzen, N. R. Gupta, David Tolmie, David Houston, T. C. John, A. J. Ritchie, Robert Taylor, E. J. Ratnayake, A. I. Sayyid, Lambertus Lambinon, Thiruvilangam Kulanayagam, A. P. McDonald, D. D. W. Waidyasekera, and Elsie J. D. Scott.

D.P.H.

The following candidates have been admitted diplomates in Public Health :—

Hannah M. M. Elder, W. E. Orchard, E. J. G. Wallace, Dorothy M. Taylor, John Thomson, C. P. Hay, H. S. Chaturvedi, Jessie I. Rosie, Anna M. M. Kerr, Winnifred N. Henderson, Elizabeth H. Nimmo, Margaret B. McLaren, D. J. Campbell, Milan Sokolovitch, and J. A. Burgess.

Surgical Instrument Manufacturers' Association.

Mr. Patrick C. Maw presided at the annual dinner of the Association at the Holborn Restaurant on Oct. 9th. Mr. H. Guy Drew in proposing "The Association" recited the results of the splendid work achieved during the 14 years of its existence. Not only had the interests of members been watched but special service had been rendered to the Government Departments by supplying information that could only come of close contact with the trade as a whole. From its inception at the close of the war, the Association had dealt faithfully with the problems arising out of surplus war stocks, dumping, and trade-union restrictions. Mr. Maw, in reply, said that while the past year had been successful, he hoped for yet greater achievements. By collecting and giving information the Association was assisting the Board of Trade in bringing to book firms which were evading safeguarding legislation. They had taken part in 16 deputations to Government departments and assisted in projected legislation. Mr. A. N. Gardner extended a hearty welcome to "The Guests." In responding, Mr. T. P. Dunhill surveyed the relation between instrument maker and surgeon, from the time when the operator was able himself to make the simple tools he required for his work. Little by little the two crafts diverged, some becoming more interested in making instruments, others in using them. For himself, while he favoured simple instruments, a patient's life might depend on the availability of complicated apparatus. British workmanship was, he thought, the best in the world and it was up to instrument makers in this country to improve on anything made by its foreign competitors. Mr. A. R. Melhuish, who also responded, said a few words on the part played by drugs in surgery.

London Hospital Dinner.

Dr. Cecil Wall, presiding at the old students' dinner at the Trocadero Restaurant on Oct. 15th, said that the late Lord Knutsford's motto during his 35 years' work for the London Hospital had always been "I dare"; and looking at the hospital to-day one might well say "Knutsford fecit." After welcoming the new chairman, Sir William Goschen, he went on to speak of many honours which had fallen to London men, including Lord Dawson's election to the presidency of the Royal College of Physicians. In the hospital itself there was steady development; but if one thing was still required by the students it was the opportunity of leading a collegiate life. At least £6000 had been raised for the proposed new hostel, but a great deal more was wanted before building could start. In the larger sphere a subject which was beginning to engage attention was the overloaded state of the medical curriculum. This should be so arranged that it could be got through in the reasonable time allotted by law, and still be complete and thorough. Some neutral body should appoint a commission which could thresh out the real requirements. Secondly, something must be done to meet the intense desire of practitioners to keep up with modern developments. The State was trying to do this in one sense at the new post-graduate medical school in Hammersmith, and though its grant had been reduced from £250,000 to £100,000, building was to begin almost at once. He hoped that the school would also develop its external activities, keep in touch with medical societies, link up all existing organisations for post-graduates, and even encourage gatherings of local practitioners—say on Sunday mornings. Dr. Wall concluded by referring to the Society of Apothecaries' attempt to raise the status of those branches of practice which are ancillary to medicine. Dr. Russell Andrews, proposing the chairman's health, said that Dr. Wall had always taken the greatest interest in everything connected with the London and Londoners, and without him the Medical Club would have died of senility. He had done a lot of work and had had no thanks whatever. In seconding the toast Sir William Goschen said that as Lord Knutsford's successor he could not pretend to be a successful beggar, but he would look on the hospital as a great national department. Dr. Robert Hutchison remarked that after 31 years on the staff he was now getting men whose fathers had also been his students—a very interesting study in heredity. They made just the same mistakes and would be just as much a credit to the hospital. After Dr. Hutchison had mentioned, inter alia, that the proper treatment for a breech presentation is to apply a poultice until it comes to a head, the evening became a competition between raconteurs. Dr. Russell Andrews again obliged; Prof. A. J. Hall "neutralised the effect of his Schorstein lecture" (delivered during the afternoon) with three good stories from Yorkshire; Sir William Goschen countered from Sussex. And in due course the residents were led away to bed.

Chelsea Clinical Society.

Sir Thomas Horder, proposing the health of the Chelsea Clinical Society at its annual dinner at the Rembrandt Hotel on Oct. 20th, said that the society was founded in 1897 by 34 practitioners in the Chelsea district, two of whom still attended—Dr. E. A. Roberts and Dr. Dennis Vinrace. At first it met at Chelsea Dispensary; then, shortly before the war, it met at St. George's Hospital, where once a year it still held a clinical meeting; and now, by way of the Florence Restaurant, it had reached the Rembrandt Hotel, where dinner meetings were regularly held. The present membership was 150, about equally divided between practitioners and "people who engage in consultant work or attempt surgical operations." He was told that the Chelsea Clinical Society supplied practically all the presidents of the other independent societies—except himself, who now represented the Harveian. It was clearly the most select of all medical societies, and he hoped to be allowed to join it. Dr. H. Rivers Pollock, the president, in reply, spoke cheerfully of the society's bank balance, but said he did not want the meetings crowded with absentee members. As an experiment they were to be made a shade less educational, and in the present session nearly all the discussions were to be opened by laymen. The subjects included the medicinal value of wines, medicine and the press, medical evidence in criminal cases, medicine and the stage, and recent developments in domestic architecture. What with wine, crime, pictures, acting, and architecture the programme was in fact "a little more Chelsea and a little less clinical." Mr. Ivor Back, proposing The Guests,

said that Lord Hanworth, like the president, was a member of the famous Pollock family, whose distinction in four generations was the outstanding proof that heredity was more important than environment. Sir John Reith, as director-general of the British Broadcasting Corporation, was the only living autocrat besides Mussolini. (The famous wireless pirate detection van, in Mr. Back's opinion, was electrically inert, though morally persuasive.) Lastly, Mr. Herbert Tilley, president of the Medical Society of London, he described as the best loved rhinological surgeon. In reply, Lord Hanworth explained the nature of his office as Master of the Rolls, complained of the elaborate arrangements for illness nowadays made in boys' schools, and quoted Thackeray to the effect that it is not for the sick man but for the sick man's friends the doctor comes. Sir John Reith expressed the feelings of an autocrat outside his autocracy, and Mr. Tilley voiced the thanks of the other representatives of medical societies. Harvey's injunction to cultivate the spirit of fellowship was, he said, well observed in such an atmosphere, and the medical societies were fulfilling their function of the decentralisation and diffusion of knowledge.

Manchester Hospital for Consumption.

Post-graduate demonstrations on diseases of the chest, ear, nose, and throat, will be given at this hospital on Wednesdays at 4.30 P.M. from Nov. 4th to Dec. 2nd. The first will be by Dr. H. R. Clarke on the Diagnosis and Treatment of Early Pulmonary Tuberculosis, and the second by Dr. Vernon Smith on Hypertrophic and Atrophic Rhinitis.

London Jewish Hospital.

A bed in the London Jewish Hospital, Stepney-green, has been endowed by the Federation of Synagogues. It has been named the "Morris Harold Davis Bed" in memory of Mr. Davis's mayoralty of Stepney for the year 1930–31.

Norwich Mental Hospital Extensions.

Last week Miss Mabel Clarkson, Lord Mayor of Norwich, opened two new blocks which have been added to Norwich Mental Hospital at Hellesdon. They form part of a comprehensive scheme necessitated by increasing demands upon accommodation. The new buildings, which have cost only £212 per bed, will accommodate 100 parole patients.

West Bromwich Hospital.

In the year ending June 30th last, West Bromwich and District General Hospital received 1111 new in-patients who stayed an average of 33·48 days and cost £10 3*s.* 9*d.* each as against £9 7*s* 1*d.* in the preceding year. There were slightly over 15,000 out-patients. During the year about £9000 was raised by a bazaar and over £7000 by a carnival.

Ophthalmic Clinics.

St. Mary's Hospital, Paddington, has now been added to the London hospitals which have clinics at which an ophthalmic surgeon may be consulted for a fee of 10*s.* 6*d.* Persons eligible for attention are members of approved societies, contributors to the Hospital Saving Association, and those whose incomes do not exceed £6 a week and are willing to sign a declaration to that effect.

Motor Accidents in Yorkshire.

The annual report of the Yorkshire voluntary hospitals committee states that during the first six months' operation of the Road Traffic Act the amount received from patients injured in road accidents was £123, whereas the cost of treatment to the hospitals concerned was £4500. Of the 619 persons injured third-party payments were received in respect of only 32, and in other cases the insurance companies denied liability.

Society for Relief of Widows and Orphans of Medical Men.

At a quarterly court of this society, held on Oct. 14th, the President, Mr. V. Warren Low, being in the chair, the deaths of two widows were reported. One had, since 1926, received grants to the value of £450; her late husband had been a member for four years and paid £8 8*s.* in subscriptions. The other had, since 1922, received £750 in grants; her late husband was a member for 20 years and paid in subscriptions £42. Special grants amounting to £107 10*s.* were voted for the assistance of orphans with their education. A sum of £610 was also voted as a Christmas present, each widow over 75 years of age to receive £15, under 75 years £10, and each orphan £10. The new legacy book, illuminated and engrossed by Sir Frederick Hallett, was on view. Membership in the society is open to any medical man who at the time of his election is resident within a 20-mile radius of Charing Cross. Full particulars on application to the secretary at the offices of the society, 11, Chandos-street, London, W.1.

Chairmanship of the London Hospital.

Sir William Goschen, a member of the house committee, has been appointed chairman of the committee of the London Hospital in succession to the late Lord Knutsford.

Enlargement of Nuneaton Hospital.

A new kitchen wing has been added at a cost of £3500. It was formally opened by Miss Behar whose father recently recovered in the hospital from a serious motor accident.

Newcastle-on-Tyne Dental School.

The new dental hospital at Newcastle-on-Tyne is now in working order. It occupies the buildings of the former Orthopædic Hospital adjoining the Royal Victoria Infirmary and is governed by a new body on which representatives of the College of Medicine and the Infirmary have seats. The dental school is also well advanced.

New Freemasons' Hospital.

The contract for the erection of the new hospital and nursing home at Ravenscourt Park, Hammersmith, was signed last week, and the foundation-stone is to be laid in May next by the Duke of Connaught, Grand Master of English Freemasons. The building will contain 180 beds and will cost £260,000; it will be soundproof with a system of signalling which will avoid bell-ringing.

A Hospitals Welfare Society.

Lady Mayo recently distributed to the five local hospitals allocations of money which bring up to £50,000 the sum collected in 11 years by the hospitals welfare society which serves the districts of Lewisham, Deptford, and Greenwich. A band of 2500 voluntary collectors call weekly, fortnightly, or monthly at 100,000 houses; some 12 million pennies have thus been collected. The money is allocated, in proportion to need, among the Miller General, St. John's, Blackheath and Charlton, Seamen's, and South-Eastern Hospital for Children.

Manfield Orthopædic Hospital.

The report of the board of management of this Northampton hospital states that 244 patients suffered from tuberculosis of bones and joints, and 252 from infantile paralysis or resultant deformities. Another 20 per cent. suffered from congenital deformities, and 15 per cent. with rickety deformities. The 128 beds are never empty and the average stay is 206 days. The hospital has 1400 patients under its care, mostly children.

Donations and Bequests.

Subject to the life interest of her husband Mrs. Jeannie Thompson Long, of Keverstone, Bath, left some £45,000. One-half to St. Thomas's Hospital, London, to endow beds to be exclusively reserved for the free and separate treatment of aged and necessitous gentlefolk; and the other half to the Great Ormond-street Hospital, London, to endow beds to be exclusively reserved for the free and separate treatment of the children of necessitous gentlefolk.—Mr. William Francis Marshall, of North Lynn, Norfolk, left £1000 to the West Norfolk and King's Lynn Hospital.

Federation of the Health Resorts of France.

The eighth Voyage Médical International on the Riviera, organised by the Société Médicale du Littoral Méditerranéen, will take place from Dec. 26th to Jan. 9th, under the presidency of Prof. V. Balthazard, doyen of the Faculty of Medicine of Paris, and under the leadership of Prof. Laignel-Lavastine and Prof. Emile Duhot. The principal places to be visited are Marseilles, Aix-en-Provence, Hyères, St. Raphael, Cannes, Juan-les-Pins, Nice, Menton, Monaco, Monte-Carlo, San Remo. Further information may be obtained from the Federation of the Health Resorts of France, Tavistock House (North), Tavistock-square, London, W.C. 1.

Sheffield Hospitals.

The report of the Sheffield joint hospitals council for 1930 shows a decrease in the amount raised by the penny-in-the-pound scheme, although, notwithstanding trade depression, a considerable number of firms have joined the scheme. The total received last year was £116,000. There is a deficit on the year's working in respect of the four voluntary hospitals of the city. Their total ordinary income was £134,584, and their expenditure £156,945. The Royal Infirmary has the largest deficit—£11,081. If, however, legacies and other extraordinary incomes are included the only hospital with a deficit is the Infirmary, with £4223. During the year the hospitals admitted 17,675 in-patients who cost £7 6*s.* 9*d.* each. In the last 10 years the hospital council has raised over a million of money. The total accumulated debt to the banks is £92,959. Casualties averaged 140 per day, and at the end of the year the waiting-lists contained a fraction under 3000 names.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 26th.—8 P.M., ODONTOLOGY. Inaugural Address by the President, Mr. E. B. Dowsett, Casual Communications. Mr. J. G. Turner: 1. Backward Movement of Lower First Molars. 2. Difficulties of Extracting Retained and Unerupted Teeth. Paper: Mr. E. B. Dowsett: Operative Procedure for Cysts of the Jaws. A discussion will follow.

TUESDAY.—5 P.M., MEDICINE. Discussion on Glandular Fever. Openers: Dr. H. Letheby Tidy, Dr. John Bland, Dr. Herbert J. Williams. Other speakers will take part.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Presidential Address: Dr. J. A. Arkwright: The Unity of Medicine. Discussion on Bone Surgery in Animals. Opener: Professor J. McCunn. Followed by: Prof. F. T. G. Hobday, Mr. C. H. Fagge, and others.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 26th.—8.30 P.M., Discussion on Blood Transfusion, to be introduced by Prof. Alexander Fleming, Dr. H. L. Tidy, and Mr. Geoffrey Keynes.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, Oct. 26th.—5 P.M., Mr. C. P. G. Wakeley: Primary Bone Tumours.

FRIDAY.—5 P.M., Sir Arthur Keith: Anatomy of the Pyloric Sphincter in Hypertrophic Enlargement.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 26th to SATURDAY, Oct. 31st.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Post-graduate course in diseases of children. Every morning.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Post-graduate clinical course in Diseases of the Ear, Nose, and Throat. All day.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Free Lecture on Wednesday, Oct. 28th at 4 P.M. by Dr. R. O. Moon on Heart Diseases.—M.R.C.P. EVENING lectures as follows: at 5 P.M., Mon., by Mr. C. L. Gimblett on Medical Ophthalmology, with special reference to Retrobulbar Neuritis, Infective Diseases of the Uveal Tract, and Intracranial Lesions. At 8.30 P.M., by Dr. J. W. McNee on Recent Work on Diseases of the Liver, and on Wed. at 8.30 P.M., by Dr. J. W. McNee on Recent Work on Diseases of the Spleen.—GOLDEN-SQUARE THROAT HOSPITAL, Golden-square, W. Post-graduate demonstration in the Out-patient Department, by Mr. Gilbert Chubb on Tues. at 6.30 P.M. No fee.—EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E. Post-graduate demonstration by Dr. Leonard Findlay on Tues. at 3 P.M. No fee.—Further particulars from the Fellowship of Medicine.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Oct. 26th.—10 A.M., Gynæcological Wards; Genito-urinary Operations; Skin Department. 11 A.M., Surgical Wards. 2 P.M., Surgical Wards; Medical, Surgical, Eye, and Gynæcological Out-patients.

TUESDAY.—9.30 A.M., Operations. 10 A.M., Medical Ward Demonstration; Dental Department. 11 A.M., Throat Operations. 11.30 A.M., Surgical Demonstration. 2 P.M., Operations; Medical, Surgical, and Throat Out-patients.

WEDNESDAY.—10 A.M., Medical Wards; Children's Medical Out-patients. 2 P.M., Medical, Surgical, and Eye Out-patients. 2.30 P.M., Gynæcological Operations. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M., Neurological Department. 11.30 A.M., Fracture Demonstration. 2 P.M., Medical, Surgical, Eye, and Genito-urinary Out-patients. 2.30 P.M., Operations.

FRIDAY.—10 A.M., Medical Wards, Skin Department, Dental Department. 2 P.M., Medical, Surgical, and Throat Out-patients. 2.30 P.M., Operations.

SATURDAY.—9 A.M., Throat Operations. 10 A.M., Medical Wards, Surgical Out-patients; Children's Medical Out-patients.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Oct. 26th.—5.30 P.M., Prof. G. M. Trevelyan: Call and Claims of Natural Beauty. (Rickman Godlee Lecture.)

TUESDAY.—6.30 P.M., Mr. S. J. F. Philpott: Fluctuations in Human Output. (First of three lectures.)

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, University-street, W.C.

TUESDAY, Oct. 27th.—5.15 P.M., Prof. C. R. Harington: Chemistry and Functions of the Thyroid Gland.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.

THURSDAY, Oct. 29th.—9 P.M., Dr. J. A. Drake: Clinical Signs of Syphilis.

LONDON SCHOOL OF ECONOMICS, Houghton-street, W.C.

WEDNESDAY, Oct. 28th.—5 P.M., Prof. R. Stenhouse Williams: Production, Distribution, and Value of Milk. (Last lecture.)

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 28th.—4 P.M., Dr. F. J. Browne: Health of the Expectant Mother.

UNIVERSITY OF BRISTOL.

TUESDAY, Oct. 27th.—5 P.M. (in the Physiological Theatre), Dr. A. L. Flemming: Partnership between Anæsthesia and Surgery. (Long Fox Memorial Lecture.)

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, Oct. 29th.—4.30 P.M., Mr. E. T. C. Milligan: Peri-ano-rectal Inflammation.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, Oct. 28th.—4 P.M., Mr. A. Clifford Morson: Recent Research in the Causation of Urinary Lithiasis.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 26th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Muscular Atrophy.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Neurosyphilis (2).

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Intracranial Complications of Sinus Infections (2).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Greenfield: The Hæmato-encephalic Barrier.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 28th.—4.30 P.M., Mr. Kenneth Walker: Prostatic Obstruction.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ousely-road, Balham, S.W.

WEDNESDAY, Oct. 28th.—9 P.M., Dr. R. G. Canti: Tissue Growth. (Film demonstration.)

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.,

WEDNESDAY, Oct. 28th.—4.15 P.M. (at St. John's Hospital 49, Leicester-square). Clinical Cases.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 27th.—5 P.M., Dr. J. E. M. Wigley: Erythema Multiforme.

THURSDAY.—5 P.M., Dr. Knowsley Sibley: Principles of Treatment. Local.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

THURSDAY, Oct. 29th.—5.15 P.M. (at 11, Chandos-street, W.), Dr. Israel Feldman: Sex Education.

CHADWICK LECTURE.

FRIDAY, Oct. 30th.—5.15 P.M. (in the Large Hall of the British Medical Association, Tavistock-square, W.C.), Dr. F. J. McCann: The Prevention of Cancer (illustrated with epidiascope).

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street.

WEDNESDAY, Oct. 28th.—4.30 P.M., Dr. William Brockbank: The Diagnosis of Lung Cancer (with demonstration).

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 29th.—11 A.M., Dr. Arnold Renshaw: Clinical Demonstration. 4.15 P.M., Mr. P. G. McEvedy: Recent Advances in Injection Treatment.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Oct. 27th.—4.15 P.M., Dr. F. R. Ferguson: Nervous Complications of Specific Fevers.

FRIDAY.—Dr. C. H. Melland: Demonstration of Medical Cases.

UNIVERSITY OF SHEFFIELD.

FRIDAY, Oct. 30th.—(At the Royal Hospital.) Dr. P. J. Hay: Eye Manifestations in General Diseases.

Appointments

BROOMHEAD, R., M.B., Ch.B. Leeds, F.R.C.S. Eng., has been appointed Hon. Assistant Orthopædic Surgeon to the General Infirmary, Leeds.

CAPENER, NORMAN, F.R.C.S. Eng., Orthopædic Surgeon to the Princess Elizabeth Orthopædic Hospital, Exeter.

FLEMING, G. W. T. H., L.R.C.P. Lond., M.R.C.S., Medical Superintendent, Hereford County and City Mental Hospital.

GREGORY, J. C., L.R.C.P. Lond., M.R.C.S., Resident Medical Officer, University College Hospital, London.

MCLAGGAN, J. D., M.B. Aberd., F.R.C.S. Eng., Surgeon to Ear, Nose, and Throat Dept., Croydon General Hospital.

Certifying Surgeons under the Factory and Workshop Acts: CALDWELL, J. R., M.B., Ch.B. St. And. (Milnthorpe, Westmorland); DALGETTY, W. S., M.B., Ch.B. Edin., (Alston, Cumberland).

NOTES, COMMENTS, AND ABSTRACTS

WHY? A PHARMACIST'S QUESTION.

A WELL-KNOWN pharmacist sends us the following letter. This is not a political paper, but it seems that the question could have been asked before the matter of tariffs became a political issue. It was, he writes, remarked upon in THE LANCET recently that the bulk of the supplies of crude drugs, from which the Galenical preparations consumed in this country are made, originate in foreign countries, and that as a consequence of the depreciation of sterling many remedial substances are dearer. We have to import these drugs for the plain reason that our soil and climate are not suitable for their cultivation on a profitable scale. On the other hand we import, mainly from the Continent, hundreds of tons of medicinal products, alkaloids, and other active principals, which can be, and are, produced by our own chemical manufacturers in an equally pure condition as the foreign materials, and at prices as low as those at which these products can be placed on this market by the foreign makers. In the one case, the reason why we buy the drugs is that we cannot grow them ourselves; in the other case we buy them from abroad, because . . . why? One is at a loss for an answer. There may be a good, sound, solid, and sufficient answer, but, if so, what is it?

Assuming that British-made alkaloids, answering the tests of the British Pharmacopœia, can be bought at the prices quoted for alkaloids made on the Continent, why do we import large quantities of alkaloids from Germany, France, and Switzerland? We are dealing solely with those products which are made here on an economic scale—that is to say, in sufficient quantities to supply the home demand, and at prices which compare favourably with the products of foreign drug and chemical factories. Among the drugs, alkaloidal and otherwise, which answer this description are such commonly prescribed substances as ergotin, eserine, aloin, strychnine, atropine, caffeine, chrysarobin, cantharidin, salicin, ephedrine, jalap resin, podophyllin resin, scammony resin hyoscyamine, capsicin, and many others. Yet all these drugs are imported into this country in substantial quantities.

Turning to the fine chemical and synthetic groups it is seen that great volumes of products falling into the one or the other categories are brought into this country each year, notwithstanding that they can be produced in British factories in unlimited quantities, and are offered for sale at competitive prices. It is known that there is a large number of fine chemicals which are not produced here, but we are dealing only with those which can be supplied by British manufacturers. Take as an example the several salts of bromine. The British Pharmacopœia lays down definite tests for these compounds, and the bromides manufactured in English factories respond to these tests. There is no mystery about it; there is nothing subtle about it; potassium bromide B.P. is potassium bromide B.P. whether made in Germany or England; there is the test for ammonium thiocyanate, the volumetric test, the lead limit, and the arsenicl imit. No British maker can put his potassium bromide on the market unless it can pass all these tests. Thus no prescriber and no dispenser need suspect the British product, nor can any buyer of potassium bromide prefer the imported article on the ground of economy, for the prices of both are the same. This being the case, can anyone answer this question: Why was it that 84 tons of bromides were imported into this country in the year 1930? What has been said about the purity of British bromide applies equally to any of the products we have already named and which we are about to name. There is no need to keep on turning over the leaves of the Pharmacopœia. What we have said about price comparisons also applies to all. Why then do we import 45 tons of aspirin in a single year—enough aspirin to provide three 5-gr. tablets for every member of the population of the United Kingdom, including new-born babes? There is no special virtue in foreign aspirin; our own drug manufacturers could, if called upon to do so, supply the aspirin needs of the whole world; yet why do we ask the Continent to send us 45 tons of it? The more one looks into this matter the more perplexed one becomes. Why do we buy from abroad, each year, 150 tons of paraldehyde? It is made here, identical in quality and price, with the foreign drug. There is no need to swell the list of those things which we make here, yet buy from abroad. But why do we buy them from abroad? Sodium salicylate, phenolphthalein, lactic acid, calcium lactate, potassium iodide, thymol, and so on and so on—they are all made at home. Are we, in some matters, as thoughtless as a nation as we are as individuals? Will the crisis make us more thoughtful?

The nation, our correspondent concludes, is faced by the prospects of a large adverse trade balance, and every little helps: the widow's mite and the prescriber's prescription.

THE COMPLETE MILITARY SURGEON.

IN his presidential address to the United Services Section of the Royal Society of Medicine on Oct. 12th, Lieut.-Colonel E. M. Cowell briefly surveyed the glorious history of military surgery throughout the ages, a tradition which the young officer would do well to examine. To be complete, the military surgeon besides possessing high professional knowledge must understand the military art. He must study organisation and administration until he reached the standard of the staff colleges, he must be ready for improved methods of transport, perhaps vital at a pinch. He must be capable of instant decision, with sound judgment, tact, diplomacy, and tireless enthusiasm (almost a superman, Dr. Cowell said). War had always helped in developing medical and surgical knowledge.

In ancient Egypt, medicine had its origin from Sekhet, the goddess of war. Two sons of Æsculapius were in the Trojan War, one of whom had a light hand for extracting arrows and healing wounds, the other had precision of mind to understand what cannot be seen, and to heal seemingly incurable diseases. Machaon, a popular medical officer, always rode in the General's chariot, "for," it was said, "a doctor is worth many men." The Romans had doctors in their armies and fleets, and the army doctors in Trajan's time wore riding breeches as they do now, with a short sword and belt. The Roman military hospital was put in a quiet part of the camp to help recoveries. Surgeons of triremes drew double pay, as the Romans did not readily go to sea. Cæsar's chief of staff removed wounded in wagons. Galen wrote a treatise on malingering; self-inflicted wounds are mentioned in the fifth century, and about the same time removal of the wounded from an action to save demoralisation. Round about A.D. 800 the Eastern Emperor bade his Commander-in-Chief to "give all possible care to the wounded to save losing your men and destroying their spirit."

In feudal times, said Dr. Cowell, little was done for the soldier, but when Edward I. was wounded in Palestine, his wound was excised by an English surgeon, and Henry V. had a surgeon and a physician with him at Agincourt. With standing armies came increase in medical personnel. Isabella the Catholic had field hospitals with her in Andulasia in 1484, and was imitated by her grandson, Charles V., and a hospital ship accompanied the Spanish Armada. Richelieu founded the Maison des Invalides in 1633. Marlborough took great interest in the health of the men, introduced rhythmical marching, and so covered the 1176 miles in 81 days to Blenheim, where he himself organised the aid posts. Pringle (1740)

made the first international convention about wounded, John Hunter was surgeon-general of the Army, but an indifferent administrator. Larrey and McGrigor were the great surgeons of the Napoleonic wars; another, Robert Jackson, wisely said, "handling a knife is the least part of a regimental surgeon's duty."

Hygeia, daughter of Æsculapius, was the first nurse. Women have always nursed wounded soldiers, the first organised order were the Béguines of Flanders in the twelfth century. In the Thirty Years' War St. Vincent de Paul inaugurated the Sisters of Charity, to whom he said, "men go to war to kill one another, you to repair its evils." Modern nursing began in Germany in 1836 with the Friends of the Poor, and it was Pastor Fliedner who inspired Florence Nightingale, according to Sir George Evatt, "the greatest sanitary reformer the world has ever seen."

Dr. Cowell concluded with a word on air transport. At a recent meeting the lack of air ambulances in this country had been deplored. The British Red Cross Society was, he said, now forming such a service. A Desoutter cabin monoplane had been presented to the Surrey branch of the Society; it was stationed at Croydon, where it was available for transporting civil cases any distance at any time. Requests should be sent to any air transport agencies, or to the Rollason Aviation Co., Croydon Air Port. The Mark I Machine can be loaded through the window, Mark II has a porthole cut in the fuselage for loading. They carry two patients lying or one with an attendant. The patient is in a Neil-Robertson stretcher, and loading takes 45 seconds. Dr. Cowell thinks this air-ambulance more convenient than those he saw recently in Paris. Films were shown of loading, the plane in flight, and landing, which aroused much interest.

HEPATEX P.A.F.

Messrs. Evans Sons Lescher and Webb, Ltd., remark that in an annotation on Substances Effective in Pernicious Anæmia (Oct. 10th, p. 807) we have referred to the extract used by Dr. J. F. Wilkinson as Hepatex. This is the well-known oral extract of liver which has been on the market for some time. The preparation employed by Dr. Wilkinson for parenteral administration is known as *Hepatex P.A.F.*

Vacancies

For further information refer to the Advertisement columns.

Aberdeen Royal Infirmary.—Asst. Gynæcologist.
Birmingham, Dudley-road Hospital.—Surgeon. £750.
Birmingham Mental Hospital.—Jun. Asst. M.O. £350.
Bradford Children's Hospital.—H.S. £120.
Bradford Royal Infirmary.—H.P. and two H.S.'s. Each £135.
Bristol Eye Hospital.—Res. H.S. £150.
Burton on Trent General Infirmary.—Jun. H.S. £150.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Assts. for Out-patient Dept. Also Res. H.S. At rate of £75.
Charing Cross Hospital, W.C.—Asst. Surgeon and Asst. Phys.
Children's Hospital Hampstead, College Crescent, Swiss Cottage, N.W.—Res. M.O. At rate of £100.
Coventry City Municipal Hospital.—Asst. M.O. £250.
Dorchester, Dorset Mental Hospital.—Deputy Med. Supt. £575.
Edinburgh Royal Infirmary.—Clin. Asst. for Ophthalmology Dept. £200.
Glasgow Corporation, P.H. Dept.—Sen. Asst. for Bacteriological Laboratory. £700.
Great Yarmouth, General Hospital.—H.S. £140.
Halifax Corporation's Isolation Hospital.—Res. M.O. £350.
Halifax Royal Infirmary.—Third H.S. At rate of £150.
Hillingdon County Hospital.—Jun. Res. Asst. M.O. £250.
Hospital for Epilepsy and Paralysis, Maida-vale, W.—Res. M..O and H.P. At rate of £150 and £100 respectively.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Res. H.S. At rate of £75.
Lancaster Royal Infirmary.—Jun. H.S. £130.
Leeds, Tuberculosis Sanatorium, Killingbeck.—Asst. Res. M.O. £250.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
Longton Hospital, Staffs.—H.S. £175.
Manchester, Royal Children's Hospital, Pendlebury.—Res. Surg.O. At rate of £125.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Middlesex Hospital and Medical School, W.—Surgical Registrarship. £300.
Miller General Hospital, Greenwich-road, S.E.—Hon. Phys. in charge of Psychological Dept.
Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.
National Institute of Child Psychology, 19, Warwick-crescent, W.—Clinical Registrar. Also Clin. Assistants.
Newcastle General Hospital, Newcastle-upon-Tyne.—H.P. and H.S. Each at rate of £150.
Newcastle upon Tyne, Hospital for Sick Children.—Hon. Phys.
Newport, I. of W., County Mental Hospital.—Med. Supt. £600.
Preston and County of Lancaster Royal Infirmary.—H.P. At rate of £150.
Queen Charlotte's Maternity Hospital, New Isolation Hospital, Goldhawk-road, Hammersmith.—Res. M.O. £200.
Queen Mary's Hospital for the East End, E.—Hon. Physician to the Psychological Dept. Also Res. M.O. and Cas. O. £200 and £150 respectively. H.P.'s and H.S.'s. All £120 each.
Queen's Hospital for Children, Hackney-road, E.—Clin. Asst. in Orthopædic Department. Also Surgeon to Ear, Nose and Throat Dept.
Royal Free Hospital, &c., Gray's Inn-road, W.C.—Sen. Asst. At rate of £350. Also 3rd Asst. £270.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Surg. Reg.
St. George-in-the-East Hospital, Raine-street, Wapping, E.—Asst. M.O. £350.
St. John's Hospital, St. John's Hill, S.W.—Asst. M.O. £350.
St. Mary Abbots Hospital, Marloes-road, Kensington, W.—Clin. Asst. £100.
St. Mary's Hospital, W.—Res. Anæsthetist. £150. Also Med. Registrar. £200.
St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Two H.P.'s. Each £80.
Saint Pancras Dispensary, 39, Oakley-square, W.C.—Res. M.O. £200.
Salvation Army, The Mothers' Hospital, Lower Clapton-road, E. Asst. Res. M.O. £80.
Samaritan Free Hospital, Marylebone-road, N.W.—H.S. At rate of £100.
Sheffield Royal Hospital.—Ophth. H.S. Also Anæsthetist. £120 and £80 respectively.
Stafford, Staffordshire General Infirmary.—H.P. At rate of £150.
Stamford, Rutland and General Infirmary.—H.S. At rate of £200.
Walsall, Manor Hospital.—Asst. M.O. £350.
Winchester, Royal Hampshire County Hospital.—H.P. and H.S. At rate of £150 and £100 respectively.
York County Hospital.—H.P., Res. Anæsthetist and Asst. H.S. Each £150.
York Dispensary.—Res. M.O. £175.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Northwich (Cheshire) and at Heytesbury (Wilts.).

Births, Marriages, and Deaths

BIRTHS.

BOURNE.—On Oct. 15th, at Abbotsleigh, Rolle-road, Exmouth, Devon, the wife of William A. Bourne, M.B., of a son.
BRUSH.—On Oct. 18th, at Ashford, Kent, the wife of Dr. J. H. Brush, of Rolvenden, of a daughter.
HORE.—On Oct. 13th, the wife of W. G. R. Hore, D.L.O., R.C.P.S., of Charnwood-street, Derby, of a daughter.
MACKINTOSH.—On Oct. 13th, at Palmerston-place, Edinburgh, the wife of Alastair K. Mackintosh, M.B., Ch.B., of Burn House, Kinross, of a daughter.
REYNOLDS.—On Oct. 14th, the wife of Major W. L. E. Reynolds, M.C., R.A.M.C., of a son.

MARRIAGES.

HARTLEY—MARSHALL.—On Oct. 15th, at Holy Trinity Church, Bournemouth, John Alan Hartley, M.A., M.B., to Mary Howman, only daughter of Mr. and Mrs. A. W. Marshall, of Bournemouth.
MITCHELL—KERANS.—On Oct. 17th, at St. Peter's, Fordcombe, Thomas Walker Mitchell, M.D., of Hadlow, Kent, to Henrietta Violet Kerans, of Fordcombe, near Tunbridge Wells.

DEATHS.

BACK.—On Oct. 14th, at Church Farm, Great Hautbois, Norwich, Herbert Hatfeild Back, M.B., M.R.C.S.
BENSON.—On Oct. 9th, at Fitzwilliam-square, Dublin, Sir J. Hawtrey Benson, M.D., aged 88.
COOKE.—On Saturday, Oct. 17th, Sir Edward Marriott Cooke, K.B.E., M.B., aged 79.
JONES.—On Sunday, Oct. 18th, at Oakley, Llandudno, Richard Jones, M.D., D.P.H., aged 73.
MCDONALD.—Very suddenly, at Walsall, on the 12th October, 1931, James McDonald, M.D., late of Bloxwich and Walsall.
MCKECHNIE.—On Oct. 14th, at Northwood, Middlesex, John Douglas McKechnie, L.D.S.
SMITH.—On Sunday, Oct. 18th, in London, after an operation, William Chearnley Smith, M.B., C.M., of The Oaks, Worcester Park, Surrey.
THOMPSON.—On Oct. 11th, at the Brompton Hospital, Dr. William Farrer Thompson, of The Chestnuts, Woburn, aged 44.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.